AUTOMOTIVE INDUSTRIES

Vol. 70, No. 22 ▫ THIRTY-SIXTH YEAR ▫ June 2, 1934

"Fours" Take First Four in 500

Cummings Wins in New Record Time; Fuel Limit Proves No Barrier to Speed

by Paul Dumas

INDIANAPOLIS—Driving the headiest race in his brilliant career, "Wild Bill" Cummings won the annual 500 mile classic and established a new track record of 104.865 m.p.h., against the previous standard of 104.162 created last year. Admittedly a master of the art of steering, but prone to operate his mount always in the full speed ahead position, Cummings today added generalship of an order that definitely places him in the championship flight.

Perhaps the Cummings pit crew played a large share in the winning strategy, but nothing less than was shown would have been enough to wrest victory from the plucky, skillful Mauri Rose who finished less than a mile behind. Both Rose and Cummings went the full distance without relief.

The starting field contained an equal number of fours and eights, and it is worth noting that among the ten place winners were six 4-cylinder cars and four eights. The first four positions, also seventh and ninth place money, went to the 4-cylinder cars. Cummings' car was a front drive and Brisko's a four-wheel drive type. All others in the first ten were rear drives.

Although it was believed that the 45-gallon fuel rule would enhance the chances of the semi-stock type racer and would also reduce the miles per hour average, neither theory was confirmed. Of slight significance is the fact that among the semi-stock finishers an overhead valve power plant placed two positions closer to the winner than did any of the L-head jobs. An approximately similar result was obtained last year.

All of the four-cylinder cars were of the overhead valve type and, with the exception of Bergere's, all fours in the first ten positions were of the four valves per cylinder type.

Only preliminary information regarding fuel consumption was available at

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"Wild Bill" Cummings, Indianapolis winner

Dealers Are Considering NACC Show Week Plan

NEW YORK—Whether the national shows will be held in 1935 still is uncertain pending final determination of dealer reaction to the N.A.C.C. proposal to substitute locally managed shows in perhaps 100 cities during a single week in the latter part of February.

Considerable feeling is reported to exist that if the national shows were dropped, there would be a marked decline in the interest in local shows. It is also felt that if the shows were deferred until late in February, the public would tend to hold off buying until that time, which would operate to accentuate the unfavorable seasonal sales conditions that exists during the early weeks of the year.

Some show managers are also pointing to the fact that with no national shows and with local shows all held during the same week, their exhibitions would not have the benefit of the elaborate displays

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U. S. Mediators Seek End of Toledo Strike

Auto-Lite Works Council Members Insist Settlement Protect Loyal Employees

TOLEDO—With both sides of the Electric Auto-Lite Co. labor controversy telling their stories to Governor George White, all is quiet at the plant, and federal mediators' efforts deadlocked, it was apparent Thursday that powerful efforts were under way to settle the strike and to check a possible general walkout affecting many of the city's industries, which has been announced for Friday, June 1.

In an effort to avoid further outbreaks of violence the Governor has requested

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The First Ten at Indianapolis

	Driver	Engine	No. of Cyl.	Speed
1.	William Cummings	Miller	4	104.865
2.	Mauri Rose	Miller	4	104.698
3.	Lou Moore	Miller	4	102.627
4.	A. B. (Deacon) Litz	Miller	4	100.750
5.	Joe Russo	Duesenberg	8	99.895
6.	Al Miller	Buick	8	98.272
7.	Cliff Bergere	Miller	4	97.819
8.	Russell Snowberger	Studebaker	8	97.298
9.	Frank Brisco	Miller	4	96.788
10.	Herbert Ardinger	Graham	8	95.937

May Vehicle Deliveries Nearing 235,000; Month's Output Indicated Above 300,000

DETROIT—May retail domestic deliveries of new passenger cars and trucks, based on factory reports, should total in the neighborhood of 235,000 units, a substantial increase over last year although representing a drop of 11 per cent from April totals.

Production during the last week failed to drop off as indicated earlier by the general trend, virtually assuring a May production total well in excess of the 300,000 mark. It is likely that some of this production and an increase in dealer orders may be traceable to fear of a general strike in the steel industry. Apparently, the industry as a whole is at present well protected against such a strike. Stocks of steel, both strip and sheet, seem to average around a 30-day supply or will reach this total before the month is out.

With production scheduled to decline materially in June, field stocks of steel should be ample to carry the industry through. It is generally doubted by manufacturers that any steel strike will prove protracted although the probability of a strike in that industry is being accepted. Several manufacturers have increased their steel releases during the past few weeks in order to increase field stocks, however.

Buick last week produced 2,788 units, the highest production since December, 1931.

Partial restoration of Pontiac production cuts has been announced by H. J. Klingler, president and general manager. Retail sales reports indicate May's sales will exceed the April record.

Oldsmobile's production for the first five months of this year exceeds the entire 1933 output, according to C. L. McCuen, president of the company. June production schedules are being set at a higher mark than those for May.

Dodge retail deliveries for the week were 5,468 vehicles, bringing the retail deliveries for the first 20 weeks of the year to 87,646 vehicles.

Plymouth retail sales for the week ending May 19 totaled 7315 cars. Shipments for the week were 10,678, 2 per cent above the previous week.

L. W. Slack

Who has been appointed Pontiac sales promotion manager succeeding W. R. Huber who resigned to join the Getchell Advertising agency

Auto-Lite Acquires Owen-Dyneto Corp.

TOLEDO—The Electric Auto-Lite Co. has acquired complete control of the Owen-Dyneto Corp. of Syracuse, according to an announcement by O. O. Minger, Auto-Lite president. The reported purchase price was about $3,000,000. No change in personnel of the Syracuse plant is contemplated, it is understood, other than a possible enlarging of the staff.

Mr. Minger stated the purchase price included plant, equipment, tools and complete business of the Owen-Dyneto organization. Acquisition of the Syracuse concern gives Auto-Lite two sources of supply, one for the Eastern and one for the mid-West and Western territories.

This acquisition adds Packard, Pierce-Arrow and Reo to the list of Auto-Lite customers.

ALB Permits Solicitation On Company Properties

DETROIT—Individual solicitation of workers on or off company premises during non-working hours such as lunch hours is permissible according to a clarifying statement issued this week by Automotive Labor Board. The statement adds that this does not mean that company property can be used for mass meetings or agitation. No solicitation of any kind is permissible during working hours whether or not the solicitor is a member of worker group or not in accordance with the board's original statement.

The board also emphasizes that membership in any organized group is not a necessary qualification for continued employment.

"Pete" Kreis

Killed in practice trial at Indianapolis

Pontiac Promotes Olsen

PONTIAC—A. W. L. Gilpin, general sales manager of Pontiac Motor Company, has announced the appointment of A. C. S. Olsen to the position of manager of the Atlanta zone. Succeeding Mr. Olsen as head of the business management department is M. P. Tomlinson, formerly assistant manager of the department.

"Hooey" Says Mr. Cord

NEW YORK—Sensational reports that E. L. Cord took his family abroad secretly two months ago because of threats to kidnap his children, were characterized as "hooey" by Mr. Cord when interviewed in England, the Associated Press says.

N.A.C.C. Committee Votes to Oppose New Wagner Bill

NEW YORK—The Executive Committee of the N.A.C.C. voted to oppose passage of the Wagner Labor Bill at this session of Congress, at a meeting held here on Tuesday of this week. This committee is composed of Roy D. Chapin, Walter P. Chrysler, Alvan Macauley and Alfred P. Sloan, Jr.

The revised bill does not provide adequate protection for the rights of minorities, the Committee believes, nor does it regard the creation of a super labor board as necessary or desirable, because agencies such as the Automobile Labor Board provide adequate machinery for handling controversies.

Although the Senate Labor Committee will not hold hearings on the revised bill, it is quite probable that the N.A.C.C. will present its objections in the form of a brief.

"Safety" Conference Rejects Uniform Gross Weight Limits

by George T. Hook,
Editor, Commercial Car Journal

WASHINGTON—The National Conference on Street and Highway Safety held its fourth meeting in Washington, D. C., last week, and if a lowly pedestrian had strayed into the auditorium of the U. S. Chamber of Commerce Building between the Latin on the ceiling and the Greek coming from the platform, he would have had good reason to wonder what it was all about.

Although realization of the fact does not seem to be general, the conference, while originally designed to promote street and highway safety, is being detoured into byways and alley-ways that have little to do with the original objective. It may be that, like Topsy, the safety conference's interests "just growed," but Topsy seems to be expanding into a Kate Smith. As it revealed itself in committee and general sessions last week, the conference has more of a uniformity than safety complex.

The obsession is apparent in the "model" laws discussed, revised and approved, to wit: Uniform Motor Vehicle Administration, Registration, Certificate of Title and Anti-Theft Act; Uniform Motor Vehicle Operator's and Chauffeur's License Act; Uniform Motor Vehicle Civil Liability Act; Uniform Motor Vehicle Responsibility Act; Uniform Act Regulating Traffic on Highways.

In the latter instance the conference not only ventured into strange waters but picked up a Jonah in the shape of uniform gross vehicle weight recommendations for trucks. The result was violent internal disorder that lasted three days and was subdued on the fourth with a rather silly sedative.

The disturbing issue was contained in a section specifying that the gross weight of any vehicle or combination of vehicles should not exceed 56,000 lb. A range of maximum gross weights was figured out on the basis of the well-known 700 (L+40) formula adopted by the American Association of State Highway Officials as a method for protecting bridges from excessive loads. (See AI, May 26, page 634.) This section also stipulated that the gross weight would be further controlled by an axle load of 16,000 lb. for high pressure, solid or cushion tires, and 18,000 lb. for low-pressure pneumatics. Whichever method figured out lower would be the controlling one.

The axle loads, having the support of the Bureau of Public Roads on strictly engineering grounds, were unanimously approved along with size limitations of 12 ft. 6 in. height, 96 in. width, 35 ft. single unit length (a tractor-semi-trailer being regarded as one unit), and 45 ft. combination length, two units maximum.

The gross weights, having the support of the same Bureau of Public Roads and on the same grounds, passed the Committee on Uniform Traffic Laws and Ordinances but were attacked in the general sessions. The arguments were that they had nothing to do with safety which should represent the only interest of the conference, and that they failed to take into consideration the variations in highway construction and traffic conditions in the several states. The railroads whose representatives swarmed all over the place, argued that the recommended weights represented mostly increases and not concessions, that increases meant larger road costs and more roads, and that all meant higher taxes and . . . well, aren't we all against higher taxes?

The automotive interests presented a united front in support of the gross weight recommendations with the argument that these were in the best interests of uniformity (with which the conference seemed to be greatly concerned) and were commendable concessions in that the automotive interests yielded on views previously maintained.

The upshot of the matter was that a substitute was offered which finally reached the drafting committee for action.

The drafting committee is, in effect, the voice of the conference. Nothing the conference does in general session is binding on the drafting committee. The drafting committee has the right to do whatever and however it sees fit. Unwilling to accept the recommendations of engineering experts, the drafting committee subsequently washed its hands of the matter by turning it over to a special committee of seven.

The seven came back with the provisions, which were approved by the drafting committee and, of course, by the general session of the conference (it's no joke to speak of them as blank cartridges, as a perusal will reveal):

Subject to the limitations prescribed by permissible axle loads (16,000 and 18,000 lb., you remember) the gross weight of any vehicle having two axles shall not exceed (blank) pounds. (Each state to fill in the blank as it sees fit.) This same blankety-blank limitation was made applicable to any single vehicle having three or more axles, and to any combination of vehicles.

A footnote explained the pussyfooting in these words: "In view of the varying conditions of traffic and lack of uniformity in highway construction in the several states, no uniform gross weight limitations are here recommended for general adoption throughout the country."

In connection with the gross weight provision the conference also approved a stipulation that "every motor vehicle operated outside of business and residence districts shall have motive power adequate to propel at a reasonable speed such vehicle and any load thereon or to be drawn thereby."

This, too, drew a note—and a blank. The

High Points of New Uniform Traffic Act

Axle load limited to 16,000 lb. on high pressure or solid tires, and 18,000 on low pressure pneumatics.

Subject to axle load limits, each state to write its own rules regulating gross weights of vehicles and combinations thereof.

Dimension limits adopted were as follows: Height, 12 ft. 6 in.; width, 96 in. with 6 in. extra allowed on dual tire changeovers; length, 35 ft. for a single unit which is defined to include tractor and semi-trailer, and 45 ft. for two units.

Service brakes must be able to stop the vehicle from 20 m.p.h. in 30 ft. and hand brakes in 55 ft.

Trailers and semi-trailers weighing more than 3000 lb. gross must have brakes on all wheels.

Comprehensive new regulation covering marker lights and reflectors for commercial vehicles.

All cars and trucks must have rear red reflectors.

Henry Ford Leaving Foster Cottage

Detroit manufacturer has purchased the Pittsburgh birthplace of Stephen Collins Foster, composer of Swanee River, My Old Kentucky Home and other American folk songs, for his Dearborn collection. The house stands on Penn Avenue in Pittsburgh, Pa.

note, involving a "performance factor," said that "a suggested method of determining whether the motive power is adequate to propel the vehicle and load at a reasonable speed is to require that the vehicle be powered so that it can ascend a grade of (blank) per cent at a speed of not less than 20 m.p.h. A speed of 20 m.p.h. for commercial vehicles is considered reasonable on an ascending grade. The percentage gradient to be inserted should be representative of conditions within each particular state. In a state of flat terrain a 3 per cent grade should be adequate. In hilly and mountainous territory the grade should be 5 per cent."

Here again no thought seems to have been given to the paradox of promoting chaos with a piece of "model legislation" whose professed aim is uniformity.

The Uniform Act Regulating Traffic on Highways contains many provisions affecting motor vehicle makers and operators.

Some of its important provisions are:

A red reflector must be located at a height not to exceed 42 in. at the rear of all vehicles. This is in addition to the rear lamp.

Clearance, identification and side marker lamps to the total of a dozen are required on vehicles or combinations exceeding a length of 30 ft. and width of 80 in.

Every trailer or semi-trailer in excess of 3000 lb. gross weight must be equipped with adequate brakes (on all wheels), controlled from the cab and automatic in application in case of an accidental breakaway.

Service brakes on all vehicles must be adequate to effect a stop within 30 ft. at 20 m.p.h., and the hand brakes within 55 ft. at the same speed.

In the case of rear view mirrors the question arose where these should be placd on commercial vehicles. Interest in uniformity seemed to have waned at this point and no action was taken.

Trucks operating upon any highway outside a business or residence district must carry "not less than three flares or electric lanterns or other signals capable of continuously producing a warning light visible from a distance of at least 500 ft. for a period of at least 8 hr." Three portable reflectors are optional.

Periodical inspection of all motor vehicles shall be compulsory at least once each year but not more frequently than twice a year.

W. H. Manning Rejoins Pontiac Engineering Div.

PONTIAC—Appointment of W. H. Manning to the position of assistant chief engineer in charge of experimental work of Pontiac Motor Co. has been announced by B. H. Anibal, vice-president in charge of engineering.

Following Mr. Manning's graduation from M.I.T., he joined the staff of C. F. Kettering in General Motors Research Laboratories. In 1928 he joined the engineering staff of Pontiac Motor Company as an assistant engineer, from which position he was promoted shortly to that of research engineer of the company.

Mr. Manning left the company in 1932 to engage in private consulting engineering work in Pontiac.

Industrial and Scientific Leaders Warn Against Bars to Progress at Sloan Dinner

CHICAGO — Mankind's future welfare largely depends upon the unfettered, intelligent use today's scientists and industrial technologists are permitted to make of what we know today and what we will learn tomorrow. Briefly, that is the composite judgment of the 500 leaders of science and industry in this country who attended the dinner-congress sponsored by Alfred P. Sloan, Jr., GM president, in the GM exhibit building, on the eve of the reopening of the Century of Progress.

Those who anticipated a firebrand attack upon governmental intervention in private industry and commerce and the present administration's policies were disappointed.

Even President Roosevelt must have expected some criticism of his administration and policies, for he sent Mr. Sloan a telegram in which he said, "I assure you the Federal government will continue its efforts to stimulate employment, increase American values and bring about progressively higher standards of living. As I have said before, private business can, and must help. The nation will remember those who are helping. It also will remember those who believe that our progress in this world is finished and who make no constructive contribution in the present emergency. I count with confidence on the loyalty and support of the nation's industrial leaders. Your meeting in Chicago on the eve of the reopening of a Century of Progress presages, I hope, a united, and national forward movement. I wish I could be with you."

L. D. Tompkins

Appointed general manager of the tire division of United States Rubber Co.

There was a warning sounded against some present trends. It was that the one sure way to prevent development of a better world was to attempt to regiment the nation's industrial forces and reduce its affairs to a static condition.

When Mr. Sloan organized the meeting he called it a "Preview of Industrial Progress in the Next Century. Explaining his reason the GM head said he felt great concern over the thinking of those persons who believed that progress in this world is finished and that from this point we must retrogress.

Charles F. "Boss" Kettering, GM vice-president, presided as toastmaster. Mr. Kettering in a brief speech told the audience that long ago he had given up all attempts to foretell the future, but said it is his conviction that "we are on the eve of things of an entirely different nature than the mere refinement, extension and development of things we already know."

Two speakers turned their audience from polite, enthusiastic applause to robust cheers. They were the veteran Charles W. Nash and Dr. Glenn Frank, president of Wisconsin University. Mr. Nash was not a scheduled speaker, but he was called upon to speak from the floor by Mr. Kettering.

"I do not want to criticize the government," said Mr. Nash, "but I think it is unfortunate that there is growing up in this country a class of people who are trying to build up a hatred between the laboring man and the man who meets the payroll.

"I believe men think that 'Boss' Kettering should be listened to rather than some young men who never earned a dollar in business in their lives. Theory does not always win. I have great confidence in the future; I believe that if the present trend goes too far in the wrong direction the people will rise up in their might and stop it."

Official speakers included Mr. Sloan, Charles F. Kettering as toastmaster, M. H. Aylesworth, president, National Broadcasting Company; Arthur H. Compton, professor of Physics, University of Chicago; Dr. Morris Fishbein, American Medical Association; Carl Gray, president, Union Pacific Railroad; Walter B. Pitkin, dean of the School of Journalism, Columbia University; Robert E. Wilson, vice-president, Standard Oil Company, and Harvey Wiley Corbett, architect.

ICC Will Hear Trucking Exceptions to RR Report

WASHINGTON—The Interstate Commerce Commission has granted the petition of the American Trucking Associations, Inc., taking exceptions to the proposed report of Examiner Mohundro authorizing railroads operating in official territory to reduce rates as much as 40 per cent to meet motor bus and truck competition. The hearing before the whole commission is scheduled for June 15.

Seek End of Toledo Strike

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the Auto-Lite plant management to keep the factory closed, but has issued an order for the shipment of finished goods to customers. Plant officials believe this will avert serious difficulties for customers provided the plant can get back into operation in a few days.

At the outset of the negotiations the Auto-Lite management agreed to submit all issues to the Automotive Labor Board at Detroit. The Federal Mediators, including Charles P. Taft, II., however, were informed by strike leaders that no arbitration would be submitted to, but insisted upon direct negotiations with the management. Strikers' demands include a flat 10 per cent wage increase and union recognition. They are also insisting that the plant be closed during negotiations and that the National Guard be withdrawn.

On the other hand the Auto-Lite Council, non-union members, who have worked all through the strike, and who claim a larger membership than the striking unionists, refuse to accede to any plan contemplating the return of strikers to the payrolls at the expense of loyal workers.

C. O. Miniger, president of Auto-Lite, upon his return from a conference with Governor White, said:

"The question at issue is too great in scope to permit consideration of anything but the best interests of all concerned. On February 1 there were employed at the plant 1,215 persons. On the last day the plant was open, May 23, there were 1,069 of these identical persons on the payroll, or 88 per cent. In the meantime the force has been increased to 1,723 persons and of these new people 418 are out. A great many of these people have remained away through fear and intimidation. One union group of 100 filed an affidavit stating they had not been represented at the meeting and wanted to return to work.

"While less than 40 per cent of the employees have remained away, the company's business was not interfered with to any extent in April. About 500 men were employed to take the places of those who walked out, and with later reduction in schedules the company has been able to carry on its normal business. The wages paid by the company average 60 cents per hour for men, and 40 cents per hour for women."

A new development in the general strike picture is the joining of the M.E.S.A. with the A. F. of L. organizations.

Occasioned by a mob which attempted to coerce 1600 workers by imprisoning them in the Auto-Lite plant, last week's tragic riots in Toledo reemphasizes the President's view that workers should have "absolute and uninfluenced freedom of choice without coercion, restraint or intimidation from any source."

"Fours" Take First Four In Indianapolis Race

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this writing, but it is believed that there will be many surprises when the check-up is completed. No cars were forced out due to failure to complete the distance on allotted fuel and there are indications that at least one money winner averaged very close to 13 miles per gallon. Special heavy fuels and manifold and carburetor alterations rather than the expected improvement in streamlining were utilized by most contenders in attempts to increase the miles per gallon.

Beset with the worry of the new gasoline rule, a few drivers apparently overlooked the one pertaining to oil consumption. At least one car was forced out due to exhaustion of its 6½ gallon oil supply. Tangible proof that the oil rule has some virtues is the fact that this year it was not necessary to close the track for scrubbing despite an unusual amount of pre-race test and practice running.

No engine trouble was encountered with either of the Diesels but the higher power of the 1934 editions probably played some part in the transmission failure on the 4-cycle job and chronic slipping of the clutch on the two cycle.

The Duray 16-cylinder 2-cycle which has suffered from overheating in previous years showed sufficient speed in its 1934 qualifying run to place it in the starting line-up. Babe Stapp drove the 25 qualifying miles at an average of 109.648 but was not allowed to start due to fact that consumption was in excess of the 3¾ gallons allowed for this type engine.

List Automobile Fabrics Hearings for June 14

WASHINGTON — Hearings will be held June 14 before Deputy Administrator A. L. Kress on the proposed standard specifications and inspection rules for the automobile fabrics, proofing and backing division of the rubber manufacturing industry.

April Registrations 222,910

PHILADELPHIA—New passenger car registrations for April amounted to 222,910 as compared with 119,909 a year ago and 173,287 during March of this year. This gives April a substantial gain of 86 per cent over April, 1933, and an increase of 29 per cent over March, 1934.

Valance, Smith Promoted By Houdaille-Hershey

DETROIT—Edward L. Valance has been named assistant general manager of Houde Engineering Corp., Buffalo, according to an announcement by Clair L. Barnes, president of Houdaille-Hershey Corp., parent corporation.

Mr. Barnes at the same time announced the appointment of Frederick A. Smith as assistant general manager of Oakes Products Corp., North Chicago, also a subsidiary of Houdaille-Hershey.

Lee B. Green Elected Globe Machine Director

CLEVELAND—At the annual meeting of stockholders and directors of the Globe Machine and Stamping Company, Cleveland, Lee B. Green, formerly works manager, was appointed a director and vice-president in charge of operations. Mr. Green's experience in the field of industrial engineering began with his apprenticeship at the Morgan Engineering Company, Alliance, Ohio.

Boden and Hammons Promoted by Nash

KENOSHA—The promotions of Don C. Boden and F. C. Hammons to regional managerships is announced by Courtney Johnson, general sales manager of the Nash Motors Company.

Mr. Boden will supervise Nash and LaFayette sales in the Cleveland (Ohio) region, and Mr. Hammons will take charge of the Nash-LaFayette sales forces on the Pacific Coast, with headquarters at Oakland, Calif.

Sterling Names Nealon General Sales Manager

PORT HURON, MICH.—Frank Nealon, former sales supervisor of the Packard Electric Co., has been appointed general sales manager of the Sterling Cable and Carbon Co. This company is now a division of the Electric Auto-Lite Co.

Prior to going with the Packard organization Mr. Nealon was associated with the Joseph Bowman advertising agency of Cleveland.

More Fisher Employees Form Own Organization

FLINT — An employee organization similar to that reported last week in *Automotive Industries* as having been formed in Fisher No. 1 plant here, has been established at the local Fisher No. 2 plant which makes bodies for Chevrolet Flint zone assembly.

Fire Threatens Saranac Inn, Saved by Wind Shift

SARANAC, N. Y.—Fire, ravaging Adirondack forests, menaced the Saranac Inn, locale of the coming Summer Meeting of the S.A.E. A fortunate shift in the wind came as a reprieve for the inn and saved it from destruction which threatened for several hours.

Revised Steel Code Effective June 11

Basing Point System Is Retained — Allowances on Motor Shipments Are OK.'d

WASHINGTON—The multiple basing point system is retained in the revised Steel Code which becomes effective June 11. Several new basing points have been added, but the summary of changes, which is all that is available as this is written, does not indicate that the additions are of any great automotive importance. In the executive order making the revisions effective for six months, President Roosevelt said that it was necessary to retain the basing point system for the time being, but that ultimately prices should be quoted on the basis of production areas.

Other important changes affect transportation charges and the open price plan. All rail transportation charges, which are included in delivered prices quoted under the code, may be reduced when delivery is by water or highway at rates approved by the code authority, subject to review by the Administrator. The price filing provision has been revised to permit any producer to meet a lower price quoted by a competitor without waiting ten days. Moreover, any producer can quote as his price the lowest based price filed by any competitor at a basing point where he himself does not file.

The previous power of the code authority to set aside an unfair price and to fix a fair base price has been revoked. Consequently, in the revised code there is no minimum price or cost recovery provision.

NACC Show Week Plan

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which the car makers create for the national shows, and that as a result the attractiveness of their shows would suffer. Synchronization of new model announcements with the show period also is an important element. Possible competition of elaborate exhibitions staged by individual manufacturers, such as last fall's Ford shows and next week's General Motors' displays, is another factor receiving consideration.

Marvel Promotes Firth

FLINT—David Firth, who has been chief engineer of the Marvel Carburetor Co., for the past two years, has been promoted to vice-president in charge of engineering, O. I. Larseon, president of the company, has announced. Mr. Firth has been associated with the Marvel company for 14 years.

See More Strife In New Wagner Bill

Industry Should Be Given Time to Prove Values of Present Adjustment Agencies

by Don Blanchard
Editor, Automotive Industries

DETROIT—Although shorn of many of the features which made its forerunner, the Wagner Labor Disputes Bill, so objectionable, the substitute National Industrial Adjustment Bill, introduced in the Senate late last week, will meet with the determined opposition of the automotive industry if its enactment is pushed at this session of Congress.

Despite the more pacific title of the substitute measure, setting up an adjustment agency of the character contemplated in the new bill at this time, leading officials in the industry believe, would be more likely to encourage than to ward off industrial strife. They feel, too, that before Uncle Sam steps into the arena with a new administrative board, industry should be given more time to prove or disprove its ability to cope with its labor problems with the tools that it now has.

The Automobile Labor Board was created by the President's settlement within the framework of existing law. So far it has given a generally satisfactory account of itself and, on its record, there is no reason for doubting that it will continue to do so. Moreover, in accordance with NRA policy, similar agencies are being set up in other industries and they too should be given an opportunity to prove themselves before a new federal administrative agency is superimposed upon them.

Such industrial boards typify the NIRA ideal of industrial self-government. Moreover, since the entire time of each of them is devoted to the problems of a single industry, they can become more intimately familiar with the problems of an industry and hence function more intelligently, than a federal agency saddled with the labor controversies of an entire nation could hope to be.

Until it is proven, therefore, that industrial boards are incapable of preserving peace, automotive manufacturers in common with many other industrialists believe that for the present no further legislation is necessary. The attitude is that management and labor should attempt to play the game with the cards with which the new deal has already provided them. If they prove inadequate, more cards can be dealt later when experience has revealed exactly what they should be.

Re-definition of the unfair labor practices has made the bill somewhat less objectionable to industry although the new definitions are still far from satisfactory. While the new bill does prohibit the company union, it legalizes the closed shop agreement and gives the National Industrial Adjustment Board, which it creates, power to say that representatives chosen by the majority shall represent all the workers. However, it does not prohibit an employer discussing grievances with an employee or group of employees at any time. Where both parties agree, the board may arbitrate a controversy, the decision being binding on all concerned. Orders of the board would be enforced through the federal courts in somewhat the same manner that "cease and desist" mandates of the Federal Trade Commission are enforceable.

The first of the four unfair labor practices covers much the same ground as Section 7a of the Recovery Act. It makes it an unfair practice "For an employer to attempt by interference or coercion, to impair the exercise by employees of the right to form or join labor organizations, to designate representatives of their own choosing, and to engage in concerted activities for the purpose of collective bargaining or other mutual aid or protection." If this clause had made interference or coercion from any source whatsoever an unfair labor practice it would prove more even-handed justice. The President recognized this point in his automotive settlement when he said, "The Government's only duty is to secure absolute and uninfluenced freedom of choice without coercion, restraint, or intimidation from any source."

The second unfair labor practice reads: "for employees to attempt, by interference or coercion, to impair the exercise by employers of the right to join or form employer organizations and to designate representatives of their own choosing for the purpose of collective bargaining." This language does not appear particularly significant except it is conceivable that the unions might threaten a strike to force employers in an industry to bargain collectively, instead of each individual employer bargaining with the representatives of his employees. This situation, it will be recalled, arose in last fall's tool and die strike. Under this rule, it would apparently be illegal for a union to strike or threaten a strike to force the employers of an industry to bargain as a unit.

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Nash Meets A Nash

Charles W. Nash greets Frank L. Martin (right) of Los Angeles who enters his old touring car in the contest to determine the oldest Nash car on the road today. The prize is the millionth Nash sedan which recently came off the assembly line and a trip to the Century of Progress

Ask Bids On 25 Flivver Planes

New Designs Probable To Meet Specifications of Commerce Department

WASHINGTON—Bids for 25 small, inexpensive two-seated airplanes, embodying characteristics in design, construction and performance that probably cannot be met by any American plane now in production, have been requested by Eugene L. Vidal, Director of Aeronautics, Department of Commerce. The bids are to be opened at the Department in Washington on July 25. The aircraft will be used by the aeronautical inspectors of the Aeronautics Branch, of the Commerce Department, in connection with their work in the field.

The planes are to have a landing speed of 35 and a top speed of not less than 110 miles per hour and at cruising speeds the engines shall give 20 to 25 miles per gallon of fuel.

Some of the other important specifications for the proposed plane are: A side by side or slightly staggered seating arrangement, with a closed or convertible cockpit; a cruising range of 300 miles against a 10-mile per hour head wind with pilot and passenger, and 40 pounds of baggage; all metal fuselage; and dual controls with provision for readily making one set ineffective.

In taking off, the plane shall be capable of clearing an obstacle 35 feet high from a standing start 800 feet away. In landing, it shall be capable of being brought to a stop within 400 feet of a 35-foot obstacle which it has cleared, in a straight and fully controlled glide. On the ground, the craft shall be easily controllable and capable of being brought to a stop from a ground speed of 45 m.p.h. in 150 feet.

The engine may be cooled in any manner and may have any arrangement of cylinders, but shall have at least four cylinders. It may operate on the four stroke or two stroke cycle and it may or may not be geared. It shall not develop over 100 hp. at rated speed. The engine will be required to pass all tests for a Department of Commerce approved type certificate.

The power plant shall require no servicing at less than 50-hour intervals, and shall be capable of operating on any good grade of aviation or automobile fuels and oils.

Aircraft purchased under these specifications will be required to meet the Department's revised airworthiness requirements which are effective July 1.

The first plane is to be delivered within five months after the order is given and the remaining craft are to be delivered within four months after the first is accepted.

Warner Brake Reorganized

BELOIT, WIS.—The Warner Electric Brake Corp. has been reorganized and its business will be continued by a new concern known as the Warner Electric Brake Mfg. Co., with an initial capital of $25,000. Officers of the new corporation are: president, R. E. Freeman; vice-president, A. P. Warner; secretary and treasurer, P. J. E. Wood.

The manufacture of electric braking systems for passenger cars and motor trucks will be undertaken as an addition to the line of brakes for heavy duty trailers manufactured for a number of years.

Raymond B. Gillette

EAU CLAIRE, WIS.—Raymond B. Gillette, founder of the Gillette Rubber Co., Eau Claire, Wis., and chairman of the board of directors, died May 20 from pneumonia which followed a heart attack 10 days before. He came to Eau Claire in 1914 and organized an industry to manufacture tires and tubes which has been developed to the point of employing upwards of 2000 workers. Previously he had been in business at Benton Harbor, Mich.

A Lower-Priced Dodge Six

New 117-in. coupe listing at $650 which has been added by Dodge. Two and four-door sedans priced respectively at $695 and $745 complete the line. These prices compare with $690 for the coupe and $790 for the four-door sedan on the series introduced in January

Orders Oil Workers Paid on 1929 Level

Ickes Mandate May Set Precedent Interpreting Code Wage Provisions

WASHINGTON—Real wages of employees in the petroleum industry are established at a level giving approximately 1929 purchasing power, by an order issued by Oil Administrator Ickes.

The order is of considerable importance to all industry because it provides a basis, which might become a precedent, for interpreting code provisions requiring that equitable readjustment of wages paid skilled labor be made to maintain established differentials over the minimums set up by the code. Such provisions have presented some knotty problems and have been the cause of considerable controversy. The plan takes into account the reduction that has taken place in the cost of living since 1929 and aims at giving employees the same purchasing power that they had five years ago despite the shorter number of hours they are permitted to work under the code.

Under the plan approved by the Administrator, the majority of skilled employees in the oil industry will get 80 per cent of their 1929 weekly earnings, although they worked 48 and 46 hrs. in 1929 as compared with 36 hrs. now. Other employees are to be paid on a graduated scale depending on the number of hours per week worked by them prior to the code and upon the character of their work, manual or clerical.

Bendix Stages Practical Working Exhibit at Fair

SOUTH BEND—A comprehensive exhibit of Bendix designed and built products and devices incorporated in Ford motor cars will be one of the features in the Ford Building at the Century of Progress. The Bendix display has been designed to show the motoring public just how the products are manufactured.

The main feature of the exhibit will be an actual Bendix-Stromberg carburetor assembly line. There will also be shown the Bendix Drive. Cut-outs and working models will permit the spectator to see this drive in operation, as well as the Bendix Startix.

April Rim Inspections Register Big Increase

CLEVELAND — Rims inspected and approved during April by the Tire and Rim Association totaled 1,635,722 as compared with 898,318 for the same month of 1933.

The January-to-April (inclusive) total for this year is 5,338,855 against 2,552,170 for the same four month period of last year.

April Car and Truck Exports Increase 20%

NEW YORK—April exports of passenger cars from this country, according to the N.A.C.C. were 16,378 and truck exports were 10,726, a total of 27,104 vehicles for the month. This is a 20 per cent increase over the corresponding month of last year.

Exports of passenger cars and trucks combined for the first four months of this year totaled 80,614 as compared with 36,708 during the same period last year, a gain of 120 per cent. The total includes 45,938 passenger cars and 34,680 trucks.

deBouder Returns

TOLEDO—Louis de Bouder, export sales manager of Defiance Spark Plugs, Inc., has returned after a three months' business trip through Europe. His itinerary included Spain, Portugal, France, Switzerland, Italy, Jugoslavia, Hungary, Austria, Czechoslovakia, Germany, Denmark, Sweden, Norway, Holland, Belgium, and England.

Paul Fuller, General Consul of Monaco, right, presenting the Grand Prix and the Premier Prix in the Aerodynamic class at the annual Concours d' Elegance, Monte Carlo, to Byron Foy, DeSoto president, in the latter's New York office

Report Ford-Mathis Agreement Reached

French Producer Denies American Will Absorb Strasbourg Factories

PARIS (*By Mail*)—An understanding has been reached between the Mathis company and Henry Ford under which the latter will help the French organization to perfect its manufacturing methods so that it can turn out a car that is low-priced and economical to run, according to an interview with M. Mathis appearing in the "Dernières Nouvelles d'Alsace et de Lorraine." M. Mathis, however, denied that the understanding meant that Ford would absorb his company.

Production of Ford cars for France and of Mathis cars, M. Mathis is credited with having said, will be merged in the Mathis factories in Strasbourg. French materials and equipment will be used exclusively and French labor almost exclusively. On the sales side, the present organizations—Mathis Company (100 per cent French capital) and Ford of France (60 per cent French capital)—will retain their separate identities. Mathis will specialize in a four-cylinder model, while Ford will concentrate on the eight-cylinder car. Lower prices are predicted. The present 8-cylinder Ford, assembled near Paris from parts partly imported, sells at about 26,000 frances ($1,800 present exchange).

Cars Wholesaling for $501-$1000 Lead in Production Gains in the First Four Months

NEW YORK—Automobiles wholesaling between $501 and $1,000 (roughly $607 to $1,300 retail) made the most impressive gains in production during the first four months of this year. As compared with the similar 1933 period. These gains are distinctly encouraging since they indicate that recovery is spreading into sections of the market where it will benefit the bulk of the industry's passenger car makers, as contrasted with last year's record when the lowest-priced group was almost the sole beneficiary of the sales upswing. In addition, the relatively large gain in this price bracket point to an increase in dollar volume that is substantially larger than the expansion in unit production.

In the truck field, the 2-3 ton group shows an equally impressive gain of 200 per cent from 4,239 units in the first four months of 1933 to 12,686 units in the similar 1934 period.

Detailed comparisons follow:

Passenger Car Production by Wholesale Price Classes

(U. S. and Canada)

Four Months 1934 and 1933 Compared

	1934	1933	Per Cent Change	Per Cent of Total 1934	Per Cent of Total 1933
$500 and under	599,834	373,260	+ 60.8	65.5	79.1
$501-$750	263,337	70,606	+272.0	28.7	15.0
$751-$1,000	32,990	12,278	+169.0	3.6	2.6
$1,001-$1,500	13,147	8,599	+ 53.0	1.4	1.8
$1,501-$2,000	4,024	3,579	+ 12.3	0.4	.8
$2,001-$3,000	3,051	2,926	+ 4.1	0.3	.6
$3,001 and over	983	635	+ 54.7	.1	.1
Total	917,366	471,883	+ 94.4	100.0	100.0

Truck Production by Capacities

(U. S. and Canada)

Four Months 1934 and 1933 Compared

	1934	1933	Per Cent Change	Per Cent of Total 1934	Per Cent of Total 1933
1½ tons and less	208,716	80,078	+161.0	93.3	93.8
2-3 tons	12,686	4,239	+200.0	5.7	5.0
3½ tons and over	1,780	718	+148.0	.8	.8
Special and buses	545	315	+ 73.0	.2	.4
Total	223,727	85,350	+162.0	100.0	100.0

War Department Requests Bids on 90 Attack Planes

WASHINGTON — The War Department has requested bids on 90 attack planes. Bids will not be accepted after July 1 and the planes are to be delivered early next year. The department will purchase 30 of the planes from the $7,500,000 made available through the Public Works Administration, and 60 will be paid for from funds available in the 1935 appropriations.

The minimum specifications are: high speed, 200 m.p.h. with useful load; operating speed (with useful load) 170 m.p.h.; endurance at operating speed with half fuel load, 6 hours; able to take off and land within 2400 feet over an obstacle 50 feet high; ceiling (with load) 15,000 feet.

French Leaves Chevrolet

FLINT—Jay H. French, supervisor of general stores for Chevrolet Motor Co., has resigned after approximately 18 years service with the company. He is also president of the Industrial Mutual Association of Flint and is resigning that post also, to retire to a rural home near Lansing.

Market Is Unresponsive To Steel Strike Threat

Institute Formulates Labor Plans—Third Quarter Books Are Opened for New Business

NEW YORK—Steel market conditions under code operation tend to diminish any discounting in advance of future contingencies. The impending possibility of a strike, to be called at the behest of the Amalgamated Association of Iron, Steel and Tin Workers, June 16, in the event of non-recognition by the steel industry of that organization and its demands, so far has been without visible effect on the market situation, save that it has further charged the atmosphere with uncertainty.

Parts makers are reported to be exercising caution in specifying against contracts, so as not to be burdened with excessive inventories in the event that motor car manufacturers should be obliged to trim operating schedules for the want of necessary material. All indications point to the probability that every ton of steel that has been contracted for before the higher prices now in effect went into force will be called for by the buyers through specifications issued in time to permit shipment before June 30.

The steel producers, on the occasion of last week's meeting of the American Iron and Steel Institute, formulated the policies of their industry with reference to meeting the problems presented by the strike threat, which does not come from representatives of their workers, it must be remembered, but from outsiders who would organize them. There is still a possibility that passage of the Wagner bill or similar legislation may make of the issue one that will be threshed out without disturbing mill operations, but steel producers are determined to remain masters in their own house.

Meanwhile a number of unrelated developments are being interpreted as having to do with the possibility of a strike. The paucity of scrap purchases by steel mills is one of these. This, however, may be due to entirely different reasons. Then again one hears that sheet finishing mills are operating at a much higher rate than the remainder of the industry. Sheets in special finishes consume considerable time in the different stages of production. So the mills, in order to complete shipments by June 30, have to speed up production. Order books for third quarter will be opened on June 1, at unchanged prices from those now on file.

Pig Iron—Lake shipments of foundry and malleable iron to automotive foundries in Michigan continue in good volume. Third quarter prices will show no change from those now in effect.

Aluminum—Steady and unchanged.

Copper—An executive from outside the ranks of the copper industry is to be chosen by the copper code authority to administer the code. Large consumers with considerable stocks of 5-cent copper on hand are complaining over requests to make monthly purchases from producers, whether they need the metal or not. Copper producers state that this scheme of having consumers freeze their holdings and buy in the higher market now in vogue was not sponsored by them, but forced upon the industry by NRA. The code price remains unchanged at 5½ cents with "outside" metal quoted ¼ at ⅜ cents lower.

Tin—Spot Straits tin sold at the beginning of the week at 52.90 cents, 10 points lower than last week's close.

Bower to Receive D.Sc.

PHILADELPHIA — Ferdinand A. Bower, Buick chief engineer, will be given the honorary degree of Doctor of Science at the annual commencement of Villanova College. Commencement exercises at the suburban college will be held June 7.

A. E. Schnell Promoted By Aluminum Industries

CINCINNATI—Arthur E. Schnell, for the last two years Supervisor of the Valve Department of Aluminum Industries, Inc., has been promoted to the position of plant superintendent, according to an announcement by M. A. Beckman, works manager.

Mr. Schnell, who is a native of Detroit, began his career in the automotive industry, with the Wilcox-Rich Company, of Detroit, later joining the organization of the National Broach Co., of the same city, in charge of the Valve Department. He left that concern to join Aluminum Industries, Inc.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Both wholesale and retail trade improved last week. Despite recessions in the bituminous coal, automobile, and steel industries, the heavy industries as a group made a good showing.

The Guaranty Trust Company's index of business activity for April stands at 73.1, as against 73.8 for March and 54.8 for a year ago. The Company's index of wholesale commodity prices on May 15 was 53.5, as against 54.7 a month earlier and 43.7 a year earlier.

Car Loadings Increase

Railway freight loadings during the week ended May 19 totaled 611,142 cars, which marks an increase of 9,403 cars above those during the preceding week, an increase of 75,423 cars above those a year ago, and an increase of 95,514 cars above those two years ago.

Food Prices Up

Retail food prices during the two weeks ended May 8, according to the Bureau of Labor Statistics, increased 0.8 per cent. The current average is 8.2 per cent above that for 1913 and marks the first advance after six successive weeks of declines.

Life Insurance Gains

Sales of ordinary life insurance in the United States during the year ended April 30 were 1 per cent above those during the preceding twelve months' period. Sales during April were 29 per cent above those in the corresponding month last year.

Current Output Up 11 Per Cent

Production of electricity by the electric light and power industry in the United States during the week ended May 19 was 11.2 per cent above that in the corresponding period last year.

Crude Oil Falls Off

Average daily crude oil production for the week ended May 19 amounted to 2,514,050 barrels, as against 2,522,950 barrels for the preceding week and 2,705,350 barrels a year ago.

Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended May 26 stood at 75.5, as against 75.4 the week before and 75.2 two weeks before. The current figure is a new high for the year and marks the fourth successive weekly advance.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended May 23 showed little change. Holdings of discounted bills and of government securities remained unchanged, while holdings of bills bought in the open market declined $1,000,000.

Storage, Parking Trade Code Suspended by NRA

WASHINGTON—Putting into effect the President's executive order, General Hugh S. Johnson has suspended fair trade practice sections of the motor vehicle storage and parking trade.

Under the executive order, General Johnson pointed out, the so-called service trades whose fair trade practices have been suspended, will continue to be bound by the provisions of their codes establishing maximum work hours and minimum wage rates, guaranteeing the right of collective bargaining, banning child labor and reserving to the President the right to cancel or modify any code or agreement. Members complying with these provisions will be entitled to display the individual Blue Eagle of their trade.

In regions where 85 per cent of the members of any one trade agree on fair practice schedules, the minority will be required to abide by the agreements reached or forfeit the Blue Eagle.

NRA has not indicated whether or not it will go ahead with the pending automotive maintenance code or class it as a trade coming under the President's executive order.

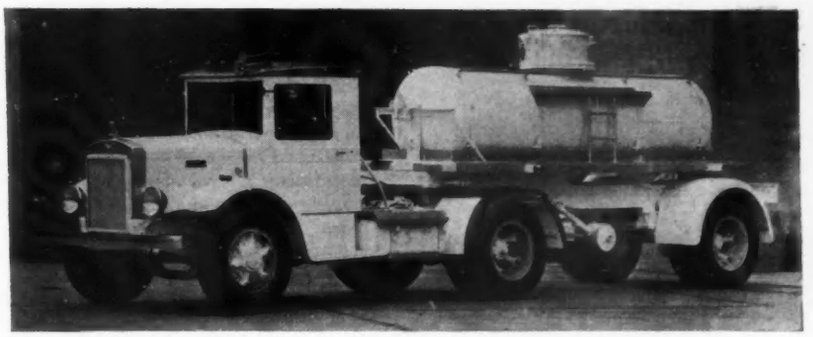
N.S.P.A. Survey Reveals No Decrease in Volume

DETROIT—No manufacturer of automotive service parts, shop tools and equipment has reported a decrease in volume of business for the first quarter of the current year according to a report published by N.S.P.A. This information was developed through a survey conducted by the association among its membership.

Compared with the first quarter of last year parts makers average an increase of 37 per cent; tools are up 46 per cent, and shop equipment 76 per cent. The general feeling among N.S.P.A. members is that the outlook for future business is better, but the tremendous increases experienced during the first quarter cannot be expected to continue throughout the year.

A. C. Warner Joins Barber-Coleman Ltd.

BELOIT, WIS.—Albert C. Warner, associated with the Warner brake interests for seven years, most recently as general manager, has resigned to form an association with Barber-Coleman Ltd. of Manchester, Eng., European subsidiary of the Barber-Coleman Co. of Rockford, Ill. He will sail from New York July 20. Mr. Warner, the son of A. P. Warner, will continue his work in the electric brake field, the Barber-Coleman interests holding the foreign rights for that product.



New Tank Equipment for Transporting Ethyl

This tractor-trailer train, comprising a Mack Model BX tractor and a 900-gallon tank trailer, is used for the transportation of tetra-ethyl lead. Owing to the poisonous nature of the material, special safety features were incorporated in the design. The tank has a shell of ½-in. thickness and is provided on top with a heavy steel dome forming a protective covering for the valves and fittings. Full air-brake equipment is used and marker lights are plentifully supplied—three on the cab and four on the tank running boards, in addition to two tail lights. The fluid weighs 15 lb. per gallon and the payload therefore is nearly 7 tons.

Form Company to Make 20 Cylinder Engines

Nuway Developing Annular Crankless Type of Design

DETROIT—Nuway Engineering Corporation of Detroit has been formed to complete the development of and promote a new internal combustion engine for aircraft, trucks, buses, and marine applications. Officials of the company state that the company is affiliated with National Carloading Corp. through a subsidiary, Midwest Haulers, Inc., a trucking concern in whose Detroit quarters the new Corporation is making its headquarters.

The engine itself is of the annular, crankless type. It comprises two groups of ten cylinders, each group arranged in a circle and the two coaxial with a central drive shaft. Between the two sets of cylinders a large-diameter drum is mounted on the drive shaft, with a cam groove cut in its cylindrical surface. Pistons in each pair of directly-opposed cylinders are connected together by a single connecting rod, and a roller carried at the center of this rod rides in the cam groove. Two sizes of engine are under contemplation at present, of 300 and 800 hp. respectively.

It is claimed that the 800 hp. unit, which has a piston displacement of some 1750 cu. in. (4½ by 5½-in. bore and stroke), develops its peak output at about 1400 r.p.m. and weighs less than 1,000 lb. The 300-hp. size is said to weigh only 290 lb. It is claimed for the Nuway engine that its cylinder jacketing is such as to make the use of a radiator for the cooling water unnecessary (this evidently for aircraft engines), but apparently there are no fins for air-cooling on the outside of the cylinders.

A further claim is that the engine can be operated on fuel oil, by means of "fuel oil converter" developed by the company and which is to be placed on the market shortly. This converter consists of a pipe coil heated by the cooling water through which the oil is passed on its way to the carburetor. A Skinner rectifier is used to remove the light unburned ends from the crankcase oil, returning these to the fuel system. Heat for this purpose is taken from the exhaust system. Starting is by gasoline, and no changes are made in carburetor setting when switching from gasoline to fuel oil, or vice-versa. The converters are at present in experimental use on trucks operated by Midwest Haulers, with standard gasoline engines.

Dynamometer full throttle runs on the fuel oil showed no loss in power when switching from gasoline to fuel oil, the test being conducted on a motor boat engine at approximately 1600 r.p.m.

It is planned to turn the manufacture of the engine over to an established engine manufacturer, Nuway doing the marketing.

Aluminum Industries, Inc.

CINCINNATI—Aluminum Industries, Inc., report a net profit of $100,208 for the year ended December 31, against a net loss of $70,889 for the previous year. Total current assets were reported as $971,530 with total current liabilities of $360,790.

Current assets included cash, $39,881, notes and accounts receivable, $320,670; inventories (cost or market), $596,897; life insurance cash value, $14,082. Liabilities listed included notes payable, $120,000; accounts and rebates payable, $163,315; Federal tax reserves, $21,917.

LeBlond-Schacht Truck Co.

CINCINNATI—The annual report of the LeBlond-Schacht Truck Co., for the year ended Dec. 31 shows a decrease of $303,844 in net loss. The net loss for 1933 is reported at $82,618 against $386,562 for the previous year.

Total current assets (including $22,571 cash) listed in the report are $799,146; total liabilities, $103,192.

See More Strife in New Wagner Bill

(*Continued from page* 669)

The third rule makes it an unfair labor practice "For an employer to interfere with or dominate the administration of any labor organization or contribute financial support to it: Provided, That, subject to such rules and regulations prescribed by the Secretary of Labor, an employer shall not be prohibited from permitting an employee, individually, or local representatives of employees from conferring among themselves, or with the management during working hours without loss of time while engaged in the business of a labor organization."

This rule in conjunction with the first unfair labor practice establish the criterion which a company union must meet. The employer may initiate the union, but the employee must not be coerced into accepting it. The form of organization, the basis of representation and the representatives themselves, must all be the workers' free choice. The employer must not interfere or attempt to control the administration of the company union, nor may he finance it. Under the Secretary of Labor's rules, however, employers may permit company union business (or outside union business for that matter) to be transacted on company time.

The fourth unfair labor practice legalizes the closed shop agreement, held illegal under NIRA. It reads: "For an employer, by discrimination in regard to hire or tenure of employment of any term or condition of employment, or by contract or agreement, to encourage or discourage membership in any labor organization: Provide, That nothing in this Act, or in the National Industrial Recovery Act, or in any code or agreement approved thereunder, or in any other statute of the United States, shall preclude an employer from making an agreement with a labor organization (not established, maintained, or controlled by any unfair labor practice) to the effect that a person seeking employment shall be required, as a condition of employment, to join such labor organization, if the agreement is sought by the majority of employees in the unit covered by it when made. Nothing in this proviso shall be construed by the board to indicate that any employer is bound to enter into an agreement conditioning employment upon membership in any labor organization."

Theoretically, if a company union were the choice of the majority of the employees, the employer could make a closed shop agreement with it which would require all employees to become members or quit. As a practical matter, however, die-hard members of an outside union quite possibly could upset the apple-cart by trumping up a charge that the company union was established, maintained or controlled by an unfair labor practice.

In settling representation questions, the board would be authorized to determine by secret ballot or otherwise by whom or by what labor organization the workers desired to be represented. The board is empowered to decide whether eligibility to participate in a choice of representatives shall be determined on the basis of employer unit, craft unit, plant unit, or other appropriate unit. (An industrial agency such as the Automobile Board can make this decision more intelligently than any national board.) Each unit may be given representation in proportion to its membership. The board at its discretion is authorized by the bill to determine that representatives agreed upon by the majority of employees in an appropriate unit shall represent the entire unit for the purpose of negotiating agreements concerning terms and conditions of employment. This would legalize the viewpoint of the present National Labor Board that the majority should rule which is contrary to the principle of proportionate representation protecting minorities provided in the automotive settlement.

Of course, how the revised Wagner Bill would work out in practice, would depend a good deal on the three persons named to represent the public on the National Board. If they were Leo Wolman's that would be one thing. But if they were Senator Wagner's that would be something else again. In making this comparison, there is no intention to question the sincerity of the Senator because there probably is no more sincere man in Congress. However, his record on the National Labor Board where he presumably was the impartial third party, demonstrates the importance of having objective minds such as Dr. Wolman's represent the public.

There is little doubt that if the measure is passed, the Supreme Court will be called upon to pass upon its constitutionality. On this point, the National Association of Manufacturers says "If the Federal Government is to permanently undertake the compulsory control of local employment relations in the face of repeated denials of the power to do so, as a regulation of manufacture, mining or construction, which is not commerce, such legislation is in effect a plain amendment of the Constitution, transferring a new power hitherto denied to the Federal Government."

West Coast Dealers Cut Used Car Gross Losses

SAN FRANCISCO—A substantial reduction in used car gross losses in the first four months of this year as compared with the similar period in 1933, is indicated by statistics of used car inventories and sales compiled by the local Motor Car Dealers' Association.

The improvement was due largely to a reduction in used car buying prices although an increase in selling prices also was a helpful factor. During the first four months of this year, the average investment per used car in stock was $307, a reduction of $40 from last year. Average sales prices, on the other hand, increased from $273 to $279. The net effect was to reduce the average used car gross loss during the first four months from 21 per cent of average inventory value in 1933 to 9 per cent in 1934.

The reduction is attributed largely to the operation of the dealer code, although car shortages in the first quarter may have been a factor.

Exposition's Old Cars Rival Smithsonian Group

CHICAGO—A group of early American automobile models, said to rival the famous Smithsonian Institute collection, has been gathered by the management of the Century of Progress Exposition. All the cars, about 100 of them, operate under their own power.

These old cars are to be used in a scene of the pageant "Wings of Century" depicting the development of transportation from ox cart days to the modern automobile and airplane.

CALENDAR OF COMING EVENTS

SHOWS

American Transit Assoc., Cleveland, Ohio ..... Sept. 22-27

Cleveland (Automotive Service Industries) ..... Nov. 19-23

American Electro Platers Soc., Detroit ..... June 11-14

Natl. Assoc. of Motor Bus Operators, Cleveland ..... Sept. 21-22

Natl. Safety Council, Cleveland, O., Oct. 1-5

MEETINGS

S.A.E. Summer Meeting, Saranac Lake, N. Y. ..... June 17-22

American Society for Testing Materials, Atlantic City, N. J. ..... June 25-29

American Chemical Society, Cleveland, Ohio ..... Sept. 10-14

American Welding Society, New York City ..... Oct. 1-5

ANNUAL MEETINGS

Natl. Automobile Chamber of Commerce, New York, N. Y. ..... June 7

CONVENTIONS

American Society for Metals, New York City ..... Oct. 1-5

American Transit Assoc., Cleveland ..... Sept. 24-27

International Foundry Congress, Philadelphia ..... Oct. 22-26

American Foundrymen's Assoc., Philadelphia ..... Oct. 22-26

National Foreign Trade Council, New York ..... Oct. 31-Nov. 2

EXPOSITION

Natl. Exposition of Power & Mechanical Engineering (Biennial) New York, N. Y. ..... Dec. 3-8

JUST AMONG OURSELVES

Dealer Code Faces Test

STORIES of automobile retail code chiseling are being passed around by word of mouth faster and faster every week. Those who are optimistic about the code tend to doubt the authenticity of many of them. Code pessimists think the rumors are merely examples of what is going on very widely.

It is our own opinion that evasion of the maximum used car trading allowance is growing rather than decreasing. Human nature seems again to be more powerful than logic in determining action. Increased prices, declining sales, mounting dealer stocks have combined to increase temptation to chisel in recent weeks. With definitely profitable deals getting ready to walk out of their doors, plenty of dealers have probably yielded.

A month or so ago, we were writing rather optimistically about the effectiveness with which the code seemed to be operating—and rather hopefully about its future permanence. Today we are far more skeptical. The public, drilled for years and years in the habit of "trading" used cars, is gradually putting up more and more of a fight against "exchanging." The heat is being put on. Factory men, regardless of public statements, for the most part are worried about the effect of the code on business in the next few months. The high-priced car makers are more than worried; they are badly upset.

Strengthening of enforcement methods; cracking down on violators and increase in punitive measures are being promoted. These alone will never turn the trick, in our opinion. We can't guess the future any better than anybody else, but we will be surprised if automobile retail code modification of some kind doesn't come about within the year.

Delivered Price Advertising

DELIVERY of an automobile to its ultimate user at the lowest possible delivered price has ever been the hope and desire of the car manufacturer.

Short of advertising delivered prices, manufacturers from time to time have tried various devices to control the spread between f.o.b. and delivered prices. None of them have worked very successfully. Even under code operation, which makes illegal the taking of extra profit on freight, a recently installed plan which based the dealer discount on the price of the car delivered at the dealer's door has, we understand, been withdrawn after a few weeks of trial.

National advertising of delivered prices probably is the only adequate means of control. United action by an overwhelming majority of manufacturers is necessary to such a program. Such action has been favored by most makers for more than a year, but refusal to cooperate by one or two important companies has made action impossible to date. Some informed sources, think advertising of delivered prices is further away today than it was twelve months ago. Eventually, however, we think it is going to come.

The National Auto Shows

ELIMINATION of the New York and Chicago manufacturer-sponsored automobile shows is imminent after more than 30 years continuous life. The N.A.C.C. is proposing that some week between February 15 and March 1 be designated as Automobile Week and that local dealer shows be held simultaneously all over the country during that week.

Admittedly the trade value of the New York and Chicago shows has declined in recent years. Strong groups among manufacturers have desired their abandonment for several years. Substitution of one big show in Detroit has been suggested frequently and supported vigorously by some manufacturers who rail against the time and money spent at New York and Chicago in activities surrounding the shows themselves.

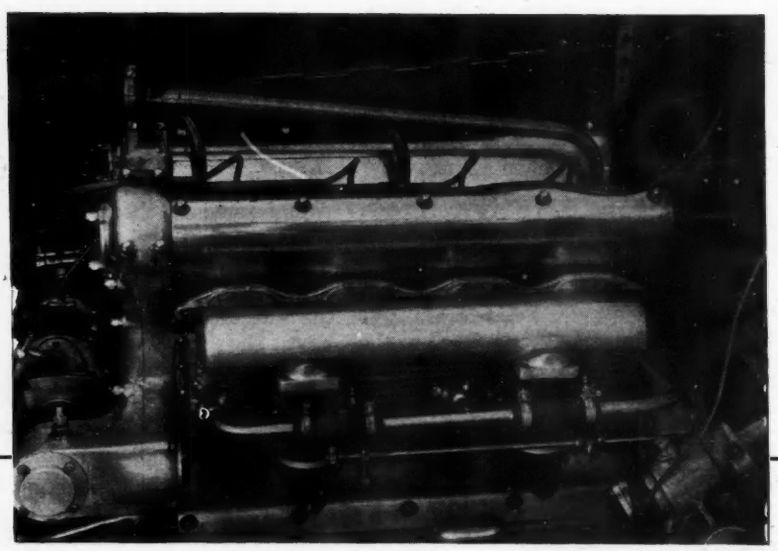
The N.A.C.C. proposal, so far as we can learn, does not contemplate financial participation by manufacturers in the local shows in any way. It would simply be a matter of getting local dealer associations to agree to hold their exhibits during a given week.

Despite their waning significance as national shows from a trade standpoint, the New York and Chicago exhibits have provided a focal point for cooperative automobile promotion and publicity of considerable national importance. The sound and fury of the New York and Chicago excitement each year, financed and sponsored by manufacturers, has had a helpful effect on subsequent local exhibits and on provincial interest. If the new program finally goes through, it would seem as though manufacturers ought to project some sort of centralized, manufacturer-financed promotion activity if the automobile is to continue to have the benefit of nationally spotlighted publicity and ballyhoo for a week or two every year.

—N. G. S.

Fuel Economy Shares Speed in Indianapolis

UNDOUBTEDLY the thought in the minds of the 33 drivers that competed in the Indianapolis race centered on the amount of fuel that was in their tanks. And that thought had considerable effect on the speeds made by the various cars, excepting, of course, the two Deisels. For, in spite of all the care exercised in preliminary fuel tests, the conditions of the race were much different than in the practice trials, when there was no traffic and no cars ahead to draw the unwary into faster but fuel consuming speeds. Under the new rules, a car was limited to 15 gal. of fuel for the 500 miles, which meant that an average of better than 11 miles per gal. had to be attained. From the standpoint of fuel economy the four-cylinder jobs were given the edge prior to the race and just how good the dopesters were is shown in the list of cars that received the checkered flag. There was considerable basis for such an opinion, for Kelly Petillo in his four-cylinder Miller engined Red Lion Special won the pole position in the qualifications by lapping the bricks for his 25 miles of qualification at an average speed of 119.329 m.p.h. And the speed could have been greater but he was flagged down by his pit crew and at the end of the test it



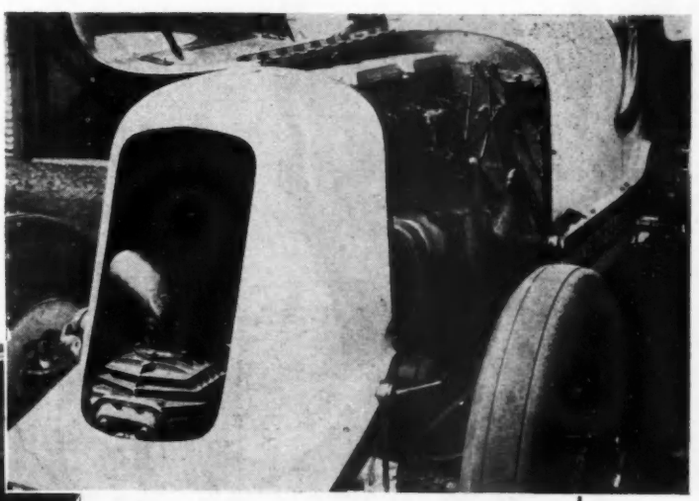
Louie Meyer used a four-cylinder Miller engine which was similar to that used by other drivers

Phil Shafer's revamped Buick engine

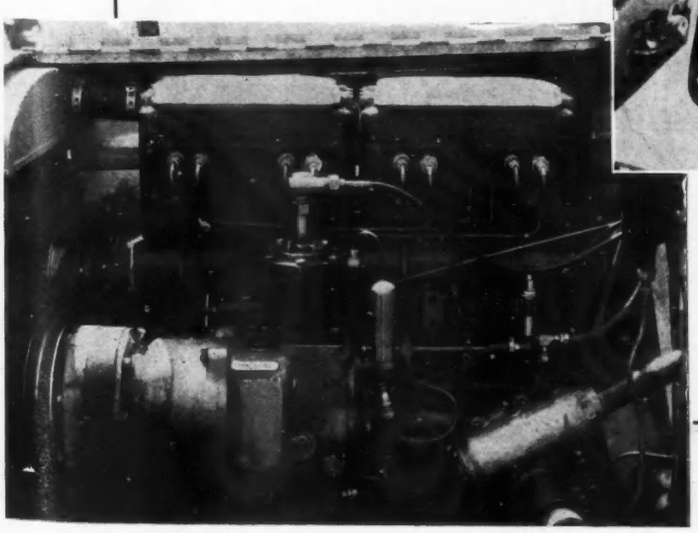
was found that there was enough fuel remaining to have made possible an average speed of better than 120 m.p.h. Frank Brisko's F.W.D. was also in the front line of cars to face the starter and his car was also powered with a four-cylinder Miller. The other car in the front rank was an eight-cylinder Miller—the Lion Head Special, driven by Wilbur Shaw. In the first five rows there were five cars with four-cylinder engines, eight cars with eight-cylinder engines and Aldan Sampson's 16-cylinder job. Of course, the cars entered by Hartz, Frame, Duray, Louie Meyer and Bill White received considerable attention from those trying to forecast the race.

The Hartz front drive was the same car that Frame drove to victory in 1932. This year, however, Frame elected to drive his own front drive, which originally was owned by Hartz and with which Billy Arnold won the 1930 event and then cracked up the two succeeding years. Duray, in addition to his two-cycle job, has the four-cylinder Miller, driven by Maurice Rose. Considerable work was done on Duray's two-cycle entry since it last saw the track in an endeavor to eliminate the overheating trouble that caused

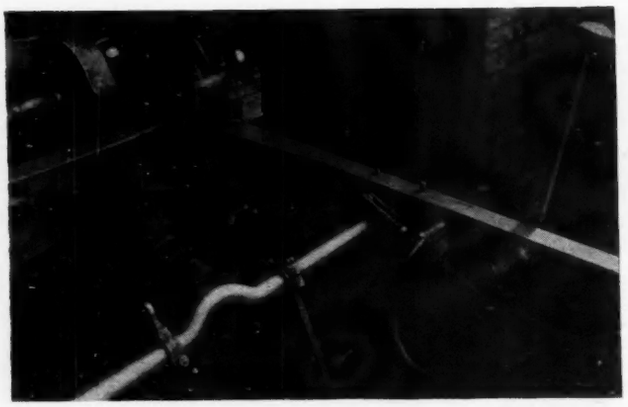
Spotlight with 500-Mi. Race



Two views of one of the Cummins Diesel entries



Above is a view of the supercharger installation and, at the left, is a side view of the power plant



Power brake installation on Hepburn's car

its early retirement from the race in 1931.

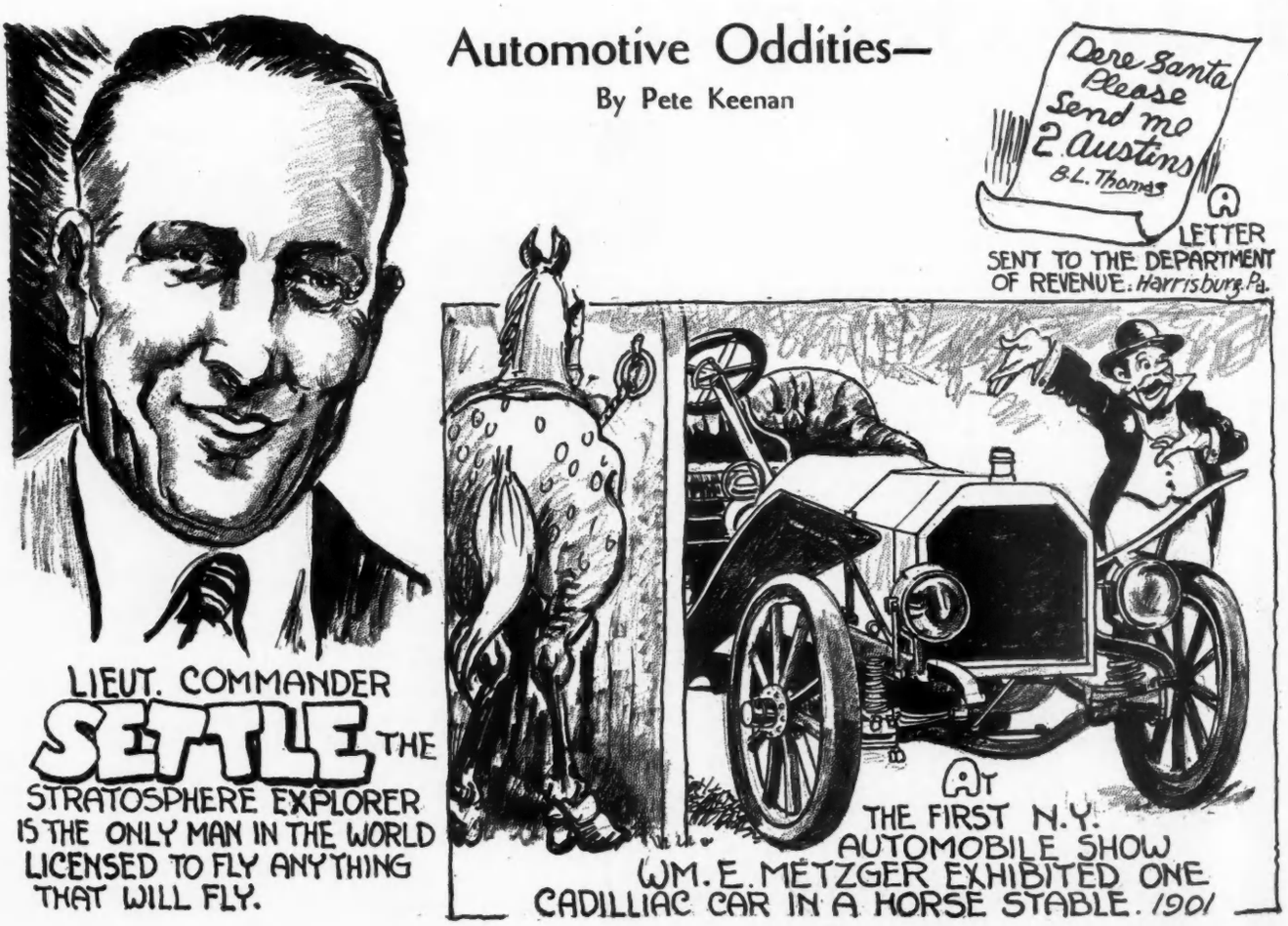
The Cummins' Diesel jobs, driven by Dave Evans and Stubblefield, also came in for considerable attention. The power plants of these two cars were identical, except that the camshaft was changed to convert the conventional four-cycle unit into a two-cycle. These two jobs were fitted with a Roots type supercharger, this being permitted under the rules, as was a supercharger on the Duray two-cycle. The two Deisels were permitted to qualify at 95 m.p.h. as compared to 100 m.p.h. for the Otto cycle cars. Louie Meyer's car was a brand new Miller four-cylinder job and the car with which he won last year's race was driven by Ralph Hepburn.

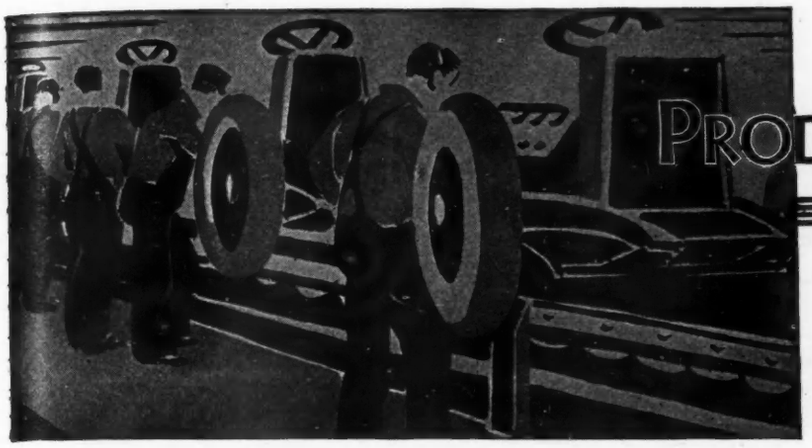
The Bohnalite Special, entered by Stanley Reed, was particularly interesting, not only because of its appearance but also because it was one of three V-8 Ford jobs. The car driven by Petticord was also a Ford V-8. On the Bohnalite Special, compression was increased to 8.50 to 1 and the bore increased so that the displacement was 225 cu. in. Two duplex carburetor to each four cylinders were also used, and as a result of these changes the power was increased from 91 hp. to 140 at 4400 r.p.m. To provide adequate oil cooling a deep aluminum oil pan, heavily ribbed, was adopted.

In the semi-stock contingent mention must also be made of the cars entered by Phil Shafer and Russel Snowberger; the former used Buick engines and the latter a Studebaker. The Schroeder Special, driven by Gullotta, the DeSoto entered by Dunning, the Grahams driven by Tramison and Ardinger, the Martz entered Hudson and the Cresco Special with a Studebaker engine completed the semi-stock threat. The factory entered team of Studebakers did not appear this year.

Automotive Oddities—

By Pete Keenan





PRODUCTION LINES

Science Advances

Fredericks heavy-duty armature, just out, features cellophane-insulated wire. DuPont worked it out for them. In place of the usual insulation, the wire has three tightly wound layers of insulation—baked enamel, cellophane, and an outer coating of nitrocellulose lacquer. Despite its higher rating, the armature is said to be interchangeable size for size with standard generator armatures.

Inserted Seats

Another step in inserted valve seat design is the composite construction adopted by Mallory, using an alloy iron for the ring, faced with Elkonite. This provides a ring with the same coefficient of expansion as the block material. Incidentally, a heavy duty engine builder is now experimenting with a similar construction using a Stellite facing.

Big Doings

Philadelphia Naval Aircraft Factory is a buzzing beehive these days. A recent grant of funds has renewed the activity in every department, particularly in the research division. The aircraft industry should watch with interest the development of test facilities for investigating spark plugs, carburetors, flexible tubing, etc. Incidentally, they are tuning up what is said to be the world's largest dynamometer, rated at 3000 hp.

On the Job

Independent springing has changed some of the service problems. Bonney Forge shows how in a new line of special wrenches for service establishments. They have an assortment for front ends, brake rigging, and steering gear adjustments. The special wrenches should make service work much lighter.

Constant Problem

Philadelphia superior court judge made a plea recently which brought us back to the days when we were a truck governor expert. In sentencing a colored chauffeur for "assault and battery with motor truck," the judge wrote into his decision a plea for some device which would check speeding on city streets. Perhaps the people making governors (not the political ilk) can give him some pointers.

It

It seems that Wissco Wire has IT. Its makers say so. IT in wire is a definite characteristic put there by studied control of metals and their fabrication. And here we thought that IT defined that certain something—you know what we mean.

Speakers Note

Universal Microphone Company, makers of the lapel microphone has brought out a two-lapel mike so that the speaker can turn his head in any direction without going blotto. This will be a great improvement for big S.A.E. blowouts and will permit speakers to use a blackboard or even slides without completely fading out.

Machine Aged

Williams who does "Out our Way" for the *N. Y. World Telegram*, et al, must have been a machine shop apprentice in his youth, judging by the way he handles his characters. We are particularly impressed by a recent strip, where a mechanic is blamed for boring an egg-shaped hole in a big cylinder. One of the boys on the side line comments that the operator is being framed for a bum job of a boring mill that must have been used for turning out Napoleon's cannons. What a spot for an inspired editorial, if we were so minded. But seriously this business of using ancient equipment for turning out new work is a serious problem. And one which unfortunately is much too common.

Protects Tools

Dipping tire and other steel molds in hot Oakite Anti-Rust solution is said to provide an effective means of preventing rusting or pitting between periods of use. The coating is easily removed.

Cool Overhead

Many important automotive applications of aluminum foil, now Alfol, seem to have established its virtue as an outstanding thermal insulation material. Refrigerator truck bodies, the Budd-built Zephyr, and other installations rely upon its properties. Has it been considered as a lining for passenger body roofs? That's a mighty hot place to test it, and if successful would win the praise of the car buyer.

Commentary

Woonsocket, R. I., in a recent newspaper ad invites manufacturers to set up shop in that fair city. Among its chief advantages, and this is a peculiar commentary on the times, is that the community is free from labor troubles. What could be more inviting these days?

Proved Power

Truck designers evidently are on the alert for news concerning proved power-operated servo mechanisms for steering gear on vehicles carrying heavy loads on the front axle. B. B. Bachman, c.e. of Autocar, for instance, recently suggested the possibility of power mechanism as an accessory which could be installed or replaced readily. What's the answer in terms of real service applications? We'll be glad to pass it on.—J. G.

MANUFACTURING MANAGEMENT METALLURGY

External Chevrolet

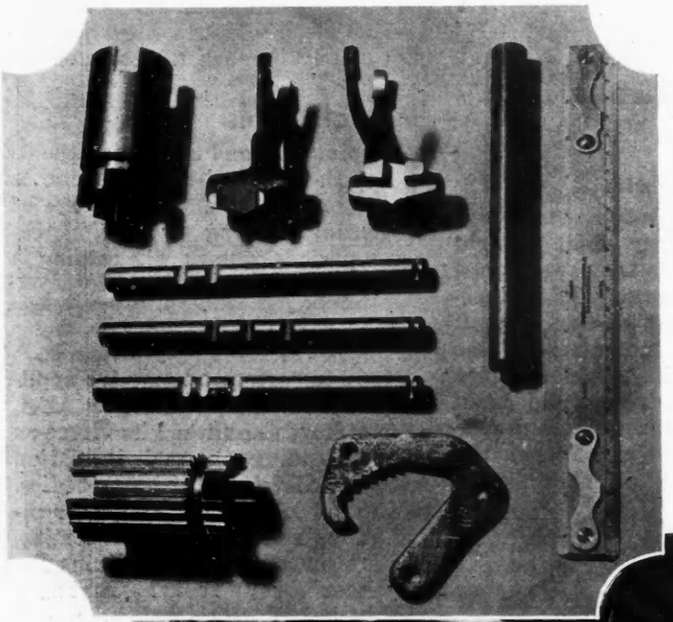
NO other evidence is needed of the progressiveness of the Chevrolet factory organization than its adoption of external broaching and applications of the new process to a representative group of units.

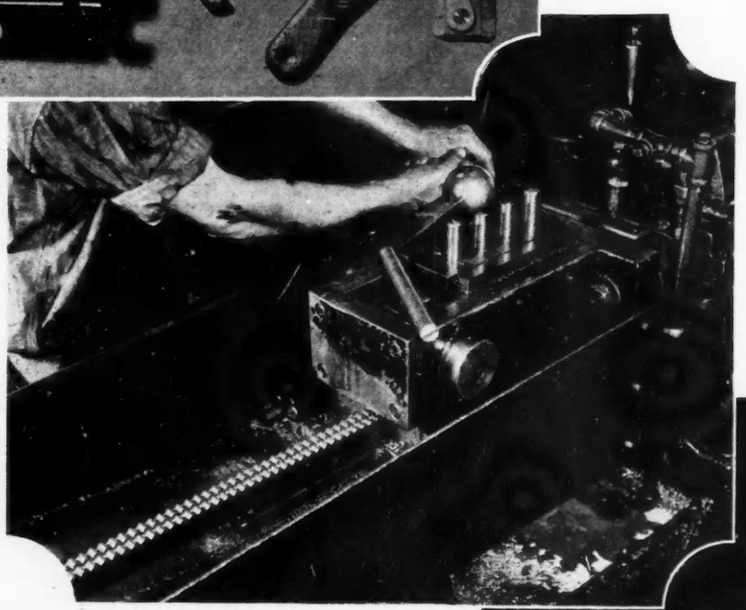
As an illustration, this article is based upon an anlysis of the external broaching practice at the Chevrolet transmission plant in Toledo, the parts made by this latest production method being shown in Fig. 1. Materials include cold rolled steel, cast iron, and alloy steel.

In external broaching the automotive industry has witnessed the development of an entirely new art, one that not only displaces orthodox methods but makes possible a new order of performance and manufacturing economy. But the adoption of the art in mass production has required vision and courage of a high order. That's why Chevrolet practice is of such great interest to automotive production executives and a decided contribution to the manufacturing art.

Those who are familiar with external broaching realize the need for heavy, rigid machines, substantial fixtures consistent with the manufacturing tolerances, and well designed broaches and guides. The extent to which these requirements have been met at Chevrolet is evident from a detailed study of the applications discussed here.

Another important principle developed in this operation is the almost universal use of a 10 to 1 mixture of soluble oil, the only exception being





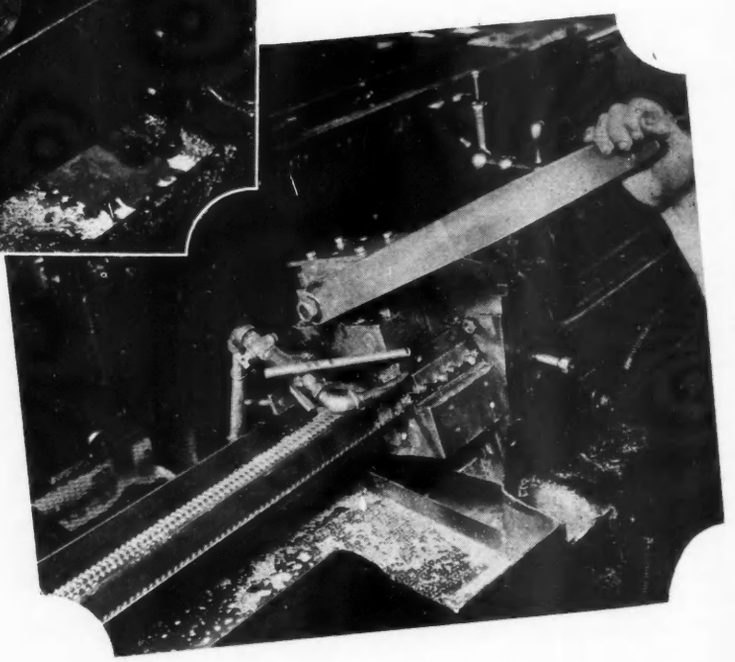


Fig. 1. Group of parts finished by external broaching at Chevrolet transmission plant in Toledo.

Fig. 2. Four countershafts are finished in one pass of the broach. Operation shows forming of tongue at one end.

Fig. 3. Cutting notches and locator slot in shifter shafts. Four shafts located horizontally in the fixture are handled at a time. Broach in the background cuts two or three notches, as desired, while the thin broach in the foreground cuts the slot in the exposed ends, simultaneously.

Fig. 5. Cutting three deep slots in end of second-and-third-speed clutch sleeve. Two sleeves handled in one setting with individual broaches. Slots are indexed one at a time, the operator doing the indexing after each pass of the broach by rotating lever A.

by Joseph Geschelin
Engineering Editor,
Automotive Industries

Broaching in Transmissions

Cutting speeds as high as 36 ft. per min. are attained while on one operation life of broach is 150,000 passes

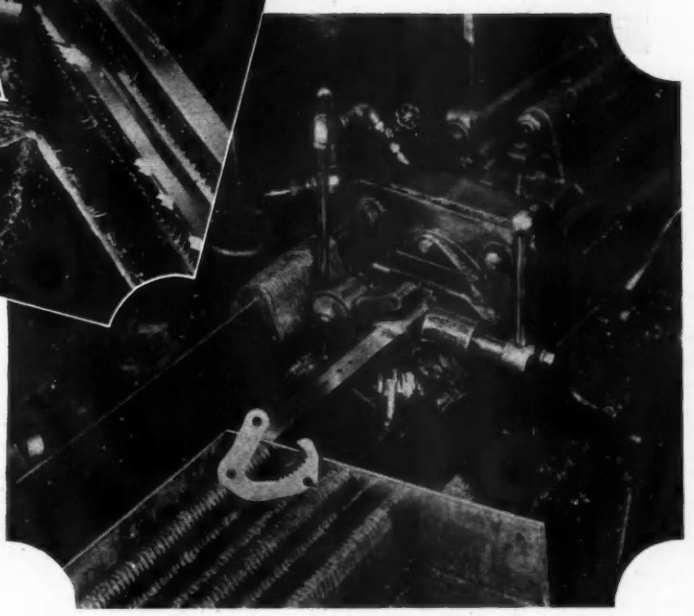


Fig. 4. Six hand brake sector stampings are handled at one setting. Broach cuts seven teeth in each sector at one pass.

the case of the sector stampings which require full-strength, 4 per cent sulfurized mineral oil.

How the tongue is formed on the end of the countershaft is shown in Fig. 2. The operation is handled on a horizontal broaching machine finishing four shafts at a time in the quick-acting fixture. The finished piece lying on the fixture shows the centrally-located tongue in one end. This view also shows the detail of the four-foot broach, pulled hydraulically under the fixture.

Fig. 3 shows the operation of cutting notches and a slot in transmission shifter shafts. Four shafts are handled at a time, being clamped horizontally in the quick-acting fixture. A wide broach 32 in. long, in the background, cuts two or three interlock notches, as the case may be, while the thin broach in the foreground cuts the narrow slot in the exposed ends, simultaneously in one pass.

One of the most interesting applications of external broaching is the cutting of gear teeth or sector notches. The horizontal machine shown in Fig. 4 is set up for broaching notches in the brake sector stamping; six ¼-inch-thick stampings, each with seven notches, are finished in one pass. Five of the stampings are ready for use directly after broaching, while the sixth, the one nearest the power end of the broach, requires a separate operation to remove burrs.

Finished pieces are stored in a tote pan at the left, stampings ready for loading in the fixture are shown in place on the bar in the background. Note the heavy, quick-acting fixture and the massive broach guide in the bed of the machine.

Second and third-speed clutch sleeves have three deep slots in each end. This requires handling in two

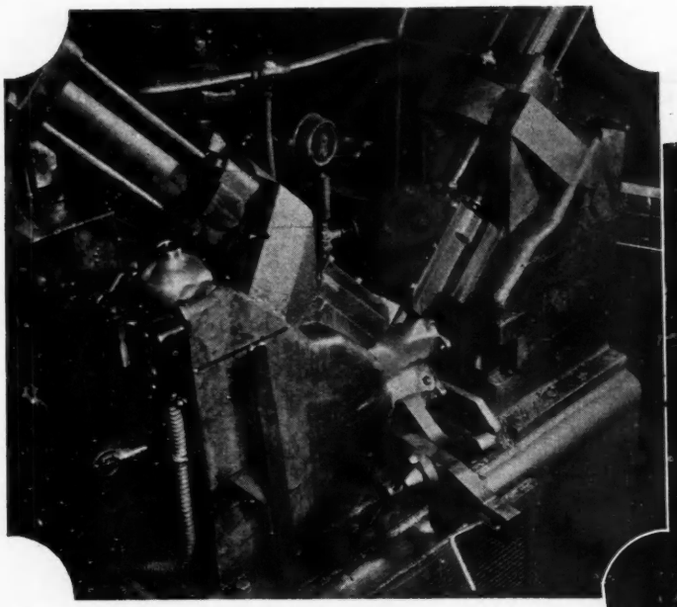


Fig. 7. Shift rail slots broached in transmission housing in this set up. Clamp in center, open, to show the casting. Each inclined head carries a short broach, 6½ in. in length, the broaches operating alternately.

Fig. 6. Servo cams are cut on each shoulder of the slots by a formed broach. Indexing mechanism similar in principle to that shown in Fig. 5.

different machines, the first set-up being shown in Fig. 5. Two sleeves, internally splined, are broached in one setting, being located in the fixture by the splines on the two arbors. Two separate broaches are used, one for each piece.

The slots in the sleeves are equally spaced, one slot broached at each pass. After each cut, lever A, in the center, is rotated by the operator and the location of the next slot accurately fixed by plunger B, at the left, which locks into the exposed notches of the pilot. After the three passes on the first operation, the work is transferred to the second operation machine, where the same procedure produces three slots on the other end.

Fig. 6 shows the broaching of the servo-cam profile on each shoulder of the previously broached slots, by means of a single-formed broach. This fixture also is fitted with an accurate pilot device which locates the cam surfaces with utmost precision. The indexing device and locking plunger are shown at the left. Note again the massive construction of the horizontal broach guide.

In Fig. 7 we have the broaching of shift rail slots in the cast iron transmission housing which is exposed partly in the ways of the machine between the two inclined heads. Two short broaches, each 6½ in. in length, operate alternately in the inclined heads and provide an accurate location for the shifter shafts. The photograph is taken with the clamp in the center, open, to disclose the housing in place. This operation is handled without cutting fluid.

The foregoing describes the broaching of all parts shown in Fig. 1 except the shifter fork. This part, a 1035 drop forging, requires two separate broaching operations; each one is a different broaching machine. The first operation consists of cutting a slot for the shift lever on one side and a slot for the interlock on the opposite side.

In the second operation on a different machine, the pads are finished to the desired dimensions and a clearance is cut across the full length of the hub. To complete the picture, the shifter fork barrel is internally broached to the finished size.

All photographs were taken with the broaches at rest and cutting fluid shut off; actually a copious supply of cutting fluid is used on all operations except the cast iron housing.

(Turn to page 691, please)

Details of Chevrolet Broaching Practice

Fig. No.	Description	Operation	Material	Broach Length (in.)	Broach Surface Speed (ft. per min.)	No. of Pieces per Grind	Life of Broach	Cutting Compound
2	Countershaft	Forming tongue on one end	1020 C.R.S.	48	30	7,000	42,000	Soluble Oil (10 to 1 mixt.)
3	Shifter Shafts	Cutting notches and locater slot in one operation with two separate broaches	1020 C.R.S.	32	30	7,500	37,500	Soluble Oil
4	Hand Brake Sectors	Cutting teeth (61010 ¼-in pieces per cut) stampings		24	25	6,500	39,000	4% Sulphurized mineral oil, full strength
5	2d & 3d Speed Clutch Sleeve	Cutting slots (3 in one end broached on one machine. 3 in in other end on another machine.)	Vanadium 6150-A	62	36	8,400 (slots)	11,200 (3 slots in each piece)	Soluble Oil (10 to 1 mixt.
7	Transmission Housing	Shift rail slot	Cast iron	6½	12	70,000	150,000	None
–	Shifter Fork	1st operation—Broach slots—both sides	1035 Forging	46	27	2,500	15,000	Soluble Oil (10 to 1 mixt.)
–		2nd operation—Finish pads and cut clearance		47	27	2 600	15,000	Soluble Oil (10 to 1 mixt.)

Zoller Two-Cycle, 90 Cu. In. Racing Engine Weighing 210 Lbs. Develops 200 Hp.

THE Swiss engineer Arnold Zoller, who lives in Berlin, Germany, has built a number of two-stroke engines to be used on racing cars, which are to take part in the major international racing events in Europe this season. Zoller has long been known as the inventor of the supercharger bearing his name, which has been used on many European racing cars as well as on the B.M.W. motor cycle holding the world's record. He also has given much attention to two-stroke engines and is the originator of the dual cylinder two-stroke engine with two cylinders side by side and a common combustion chamber. Inlet ports are at the bottom of one cylinder, exhaust ports at the bottom of the other, both being uncovered by the respective pistons. The advantage of this arrangement is that the exhaust ports, while opening earlier than the inlet ports, also close earlier, which enables the engine to be supercharged.

The new Zoller engine is of this type. It has six dual cylinders of 1.69 in. bore and 3.3 in. stroke, steel liners being inserted into an aluminum block comprising both cylinders and crankcase. The connecting rods of the pistons controlling the inlet ports are linked to those controlling the exhaust ports. The crankshaft is of the built-up type and runs on roller bearings, while the "big ends" have needle bearings.

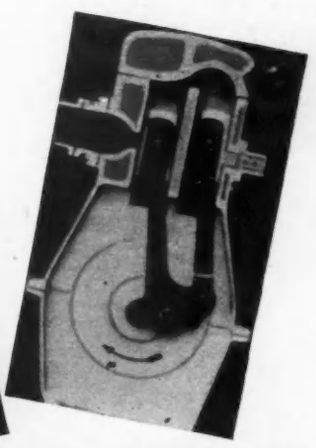
Flanged to the front of the crankcase are two Zoller superchargers, one above the other, and in front of this is the water pump. The superchargers are gear driven and the relative speed of the superchargers can be readily changed by changing the gears. Also, one of the superchargers can be disconnected at any time and the engine then works with one only. The supercharger draws in charge from a Solex dual downdraft carbureter and delivers it through a water-cooled pipe to the inlet ports. A supercharging pressure of 21 lb. per sq. in. is used, and two relief valves in the feed pipe are set to open when the pressure exceeds 28 lb. per sq. in. Ignition is by a Scintilla Vertex magneto (with vertical shaft).

The complete engine weighs only 210 lb. and develops 200 hp. at 5500 r.p.m. It is very compact, the forward mounting lugs being only 12 in. apart. Provision is made for a high rate of water circulation, and a fan is dispensed with. Fresh oil is forced to the bearings under a pressure of 100 lb. per sq. in. by a piston-type pump.

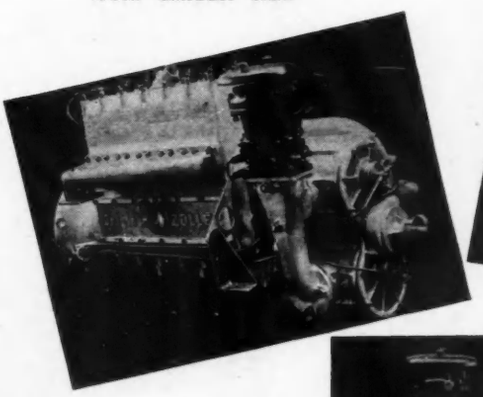
The engine has a piston displacement of 90 cu. in., but is said to receive the same amount of charge as a 365-cu. in. conventional engine with atmospheric induction. Zoller intends to supply this engine also for sports cars, restricting its output to 130 b.hp. at 3800 r.p.m. Furthermore, he plans to bring out a similar 45 cu. in. unit for racing cars falling within this class.

I understand that the engines and cars are being built in the factory of the Neue Roehr Werke A. G. of Oberramstadt in Hesse. As the Mercedes-Benz and Auto-Union racing cars built for this year's races will not be for sale, Zoller expects to do considerable business with German drivers who wish to take part in these races.

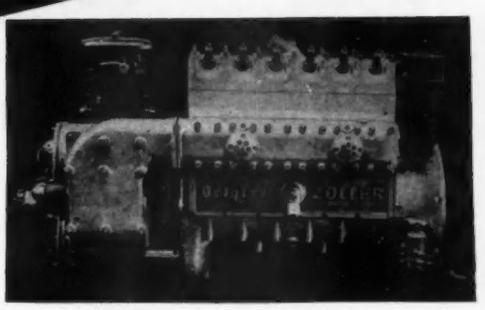
Sectional view showing arrangement of cylinders, crank train and ports



Zoller engine seen from exhaust side



Inlet side of Zoller engine



Automotive Exhibits Again Will

Preview reveals most of last year's exhibitors will be back with many new features—Ford Building is an outstanding addition to the show

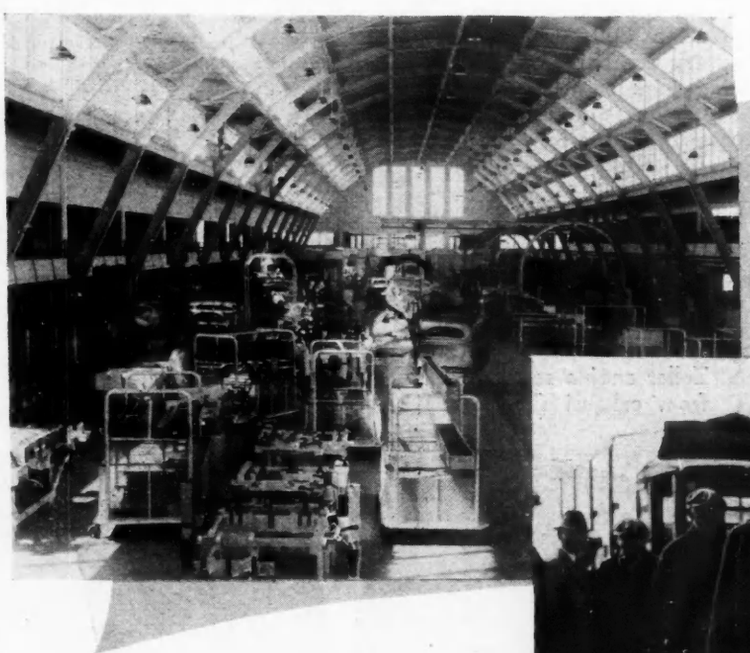
IF there was any question about it last year, there certainly won't be for 1934: the Automotive Industry dominates the Century of Progress Exposition. It might even be said that if it hadn't been for this great industry there probably wouldn't have been any Exposition this year. Primarily credit for this should be given to the decision of the Ford Motor Company to be represented.

In fact, it wasn't until after the announcement of Ford's entry that it became certain there would be a Fair. What happened thereafter is history. Sixty per cent of the exposition this year is new. And of the older exhibits there is scarcely a single one that hasn't something new, something more entertaining or instructive.

That applies particularly to the automotive industry. Those of the exhibition features which were so highly successful last year are retained and improved—those which failed to attract major interest have been discarded and new ideas substituted.

It cost the automotive industry roughly $3,500,000 last year to be represented. That it was worth while seems to be evident from the fact that the new exhibits, improvements, etc., this year will raise the total cost of participation by the industry to around $6,000,000.

The cost of the Ford exhibit alone —which incidentally might be said to dominate in extent the automotive showings in the same manner as the



General Motors is refurbishing the Chevrolet assembly line to improve visibility from the spectators' gallery.

Henry Ford takes first look at the $2,000,000 investment his company is making at the exhibition. At Mr. Ford's right is Rufus Dawes head of the Century of Progress.

Dominate Century of Progress

by Athel F. Denham
Detroit Editor,
Automotive Industries

industry dominates the entire exposition—will run close to the $2,000,000 mark. General Motors is adding another million to the two spent last year. Chrysler has spent another quarter million merely in redecorating and reequipping its exhibit since last year.

Then there are Studebaker with the largest automobile ever built, housing a motion picture theater. Nash with its mechanical, glass-enclosed parking machine, Hupmobile with an aerodynamical exhibit in the Travel and Transport building, designed by Raymond Loewy, creator of the new Hupps, Firestone with an even more extensive exhibit than last year, Mack Truck in the same building, International Harvester with a radio operated tractor highlighting its exhibit, and numerous others. The Ford building alone will house exhibits of some dozens of manufacturers which contribute to the production of Ford and other makes of cars. Most of these exhibits will be in motion — showing how parts, bodies, upholstery, etc., are manufactured.

As a matter of fact animation is an even more important attraction of automotive exhibits this year than last. It may be said to be the keynote. To some extent there will be less effort than last year to sell automobiles from the show itself. Not a single salesman will be attached to the Ford exhibits, it is reported. Last year Chrysler gathered names and addresses of all those riding in

The "Big Three" Exhibition Buildings

The exhibition buildings of the industry's three leading manufacturers are among the dominant features of the 1934 Century of Progress. Reading from the top, the buildings are General Motors, Ford and Chrysler.

its cars at the exposition. This year the idea has been dropped.

The industry, so far as salesmanship is concerned, evidently is if anything more interested in the hundred million people in this country who WILL NOT visit the exposition this year, than in the twenty odd who will be there. The industry as a whole, and individually wants its visitors to tage back home a story of entertainment, education, and interest tied in to its products.

From this point of view the arrangement seems to have been admirably handled by the exposition executives. Ford will show how the parts are made, and give the history of transportation in a manner glorifying its exhibits last winter in such cities as Detroit and New York; General Motors, repeating the Chevrolet assembly line, will show how cars are assembled; and Chrysler will demonstrate cars on its special track under the supervision of that famous character, Barney Oldfield. Other exhibitors add different phases of automotive design, construction, handling, etc., so that the visitor to the fair can get virtually a complete highspot picture of the entire industry.

Most of the automotive exhibits are concentrated at the south end of the Exposition as last year, but whereas in 1933 this end was separated from the northern part by the Midway, an extensive army camp, etc., this year these exhibits have been removed from the mainland making access easier. Even at that some twelve million of las year's 22,500,000 admissions visited the G.M. building, and some ten million the Chrysler exhibit. The percentage ought to run higher this year.

The entire southern or automotive end of the Exposition presents a unified color scheme—an evidence of industrial cooperation. White is the basic color for all the buildings, with different color trimmings on the individual exhibits, a scheme promoted by Albert Kahn, well-known architect and designer of the Ford building.

Let's take a look now at some of the individual exhibits in more detail. Ford's giant building—the largest at the exposition—houses three major types of exhibits. In the rotunda is the history of individualized transportation, all the old vehicles preceding the automobile, then the earliest automobiles, and so on, up to the latest Ford.

The shorter wing off the rotunda houses the Museum where will be found such items as Ford's original workshop, lathes, etc., transferred here brick by brick and part by part. Here also are historical exhibits of Mr. Edison's early career. The North, or main wing houses the exhibits of Ford's suppliers. The entire building, while erected for only five months, is designed so that the structural members can be removed and used later in a permanent building elsewhere.

Of the interesting manufacturing exhibits by suppliers are the fabrication of wheels by Kelsey Hayes, steel bodies by Briggs, body upholstering and finishing by Murray, castings produced in a miniature foundry, and production processes by Firestone.

Ford, like other automotive exhibitors also has a motion picture theater seating some 300 people.

To the west of the Ford building is a soy bean plantation with exhibits showing the manufacture of various products from the soy bean in a typical farm barn which incidentally has also been removed board by board from Ford's birthplace in Detroit.

To the east, on the lake is Fork Park. Here amid attractive landscaping, have been faithfully reproduced all the known types of roads in the world from the Appian Way of Rome's early days down to the most modern concrete highway, and including corduroy, macadam, wood and clay brick, gravel, etc. Visitors will be offered the opportunity of driving over these roads in Ford cars—incidentally offering a means of demonstrating riding qualities of Ford automobiles.

In this part also is located the shell in which there will be concerts all summer by the Detroit Symphony Orchestra, with benches for hundreds terraced around the shell.

The main idea of the Ford exhibit is institutional. From the showmanship standpoint it gives a conception of the so-called Ford Empire and is typified by a tremendous revolving globe, in relief, in the center of the rotunda.

In promoting the Ford show at the Exposition, there have been solicited the cooperation of Ford's eight thousand dealers, who are being supplied with complete information by the Ford Motor Company as to transportation, housing, costs, etc. Courtesy cards will be issued by such dealers, and a large information bureau operated in one of the Chicago hotels.

This will be the only manner in which Ford will attempt to capitalize directly on Exposition visitors. The contacts thus established by Ford dealers undoubtedly should offer the means of building a valuable prospect list.

Aside from the Chevrolet assembly line which is the highlight of the G. M. building, the entire exhibit is new. As a matter of fact even the assembly line has been revamped. The line has been made more visible by eliminating overhead structures and reflooring with battleship linoleum.

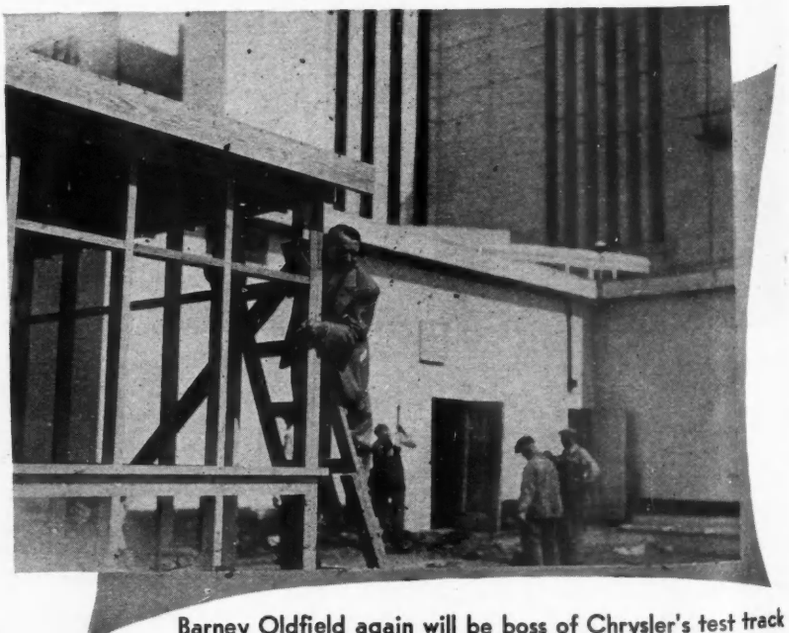
General Motors

The building houses exhibits of some 75 G. M. subsidiaries. I n the main lobby are a series of twenty-one major inventions claimed to be pioneered by G. M. and its subsidiaries. The method is ingenious. It shows the result of the invention in a mural panel form, in front of which are reproductions in miniature of what the conditions were before the invention came into being.

Another interesting exhibit is that of General Motors Research Corp. Housed in an almost air-tight and air-conditioned room, it includes numbers of scientific instruments used in research work—all in actual operation. There is a fluorescent fountain in the center composed of minerals used in research and illuminated by the breaking up of ultra-violet light.

Then there is a robot-phone giving lectures and answering questions, a basic idea which will be found in many exhibits this year. One of these, the talking Pontiac Chief of last year will, later in the summer, act as chairman of the first convention in history of wooden cigar store Indians, these Indians now being gathered by Pontiac dealers.

Another assembly is to be found in the G. M. building—that of spark plugs



Barney Oldfield again will be boss of Chrysler's test track where sensational demonstrations of performance again will be put on daily. He is shown here supervising the construction of his office at the track.

by the A. C. Spark Plug Company, operated by winners of a beauty contest held in the A. C. plants in Flint. Here again there is a robot made up of A. C.'s varied lines of products, to answer questions. There are also operating models of such products.

In all G. M. will have some 350 people attached to the Exposition, including salesmen. Last year the corporation sold some 3000 cars at the building, and obtained lists of some 50,000 prospects for distribution to dealers.

Chrysler

Chrysler Corporation's exhibit will have as its main feature again the test track under the supervision of Barney Oldfield. Last year 261,720 people were given rides around this track by a staff of drivers. The 130 people attached to the building include 16 retail salesmen. Last year Chrysler sold over 1000 cars at the Exposition, directly, and distributed some 6000 prospect slips to dealers. A grandstand for visitors to watch driving demonstrations by test drivers has been constructed. It seats some 1200 people. A lighting system this year permits night shows.

The interior of the building has been redesigned by Count Alexis de Sakhnoffsky. Each niche is given up to demonstrations of major Chrysler car features from an engineering-design viewpoint. Thus there is a demonstration of the theory of Airflow design, including a miniature wind-tunnel; flashwelding of steel body panels; there is a Belgian Roll chassis dynamometer in operation to test structural strength; a "floating power platform" on which ten people may stand, to show the difference in vibration of the platform when operated in turn by engines solidly and flexibly mounted. There is an exhibit of a miniature steel plant producing alloy steels used in the cars. A battery frozen in a cake of ice is connected to a starting motor which through a reduction gear hoists a Plymouth sedan four feet in the air in three minutes.

The building also houses a motion picture theater seating 280 people. Here there will be continuous projection, highlighted by a picture in color representing a trip through the World's Fair, ending up at the Chrysler exhibit and finishing with demonstration tests of Plymouth cars at the Exposition. Other movies lead up to sales talks on other Chrysler Corporation cars.

Outside of the building is another novel exhibit, a gigantic forging hammer making steering spindles for Plymouth cars, one every two minutes, one of the most intricate forgings in the car. These will be shipped back to Detroit for assembly into new Plymouths.

Travel and Transport Building

The largest automobile ever built, Studebaker's contribution to the Exposition is eighty feet long and thirty-nine feet high. Located in the Travel and Transport building, it seats 80 people, and is a motion picture theater, where movies showing the history of the automobile, and especially the story of Studebaker, will be projected.

Courtesy Detroit News

This projected design for one of the future's streamlined automobiles, conceived by Amos Northup, chief designer of The Murray Corporation of America, will form the center panel of a 270 foot mural, which will be the background for the Murray exhibit in the Ford Building. Mr. Northup (right) is shown with Leonard Keller (left), his assistant.

In the Travel and Transport building are also located the aerodynamic exhibit of Hupmobile also a Hupmobile on a platform dynamometer probably syncronized with road conditions projected on a screen for driving tests. The exhibits of Mack, International Harvester, Electric Storage Battery Company, Radio Corporation, Stewart Warner, United Automotive Mfg. Co., Borg Warner Corp., Simoniz Company and the Overhead Door Co. are also in this building.

Nash's mechanical parking tower, 80 feet high, glass inclosed in outside of this building. Firestone's own building is north of the automotive group and repeats the manufacture of tire casings from crude rubber. Here also are Firestone's "singing fountains" which attracted so much attention last year, tuning color to music. Firestone has enlarged its exhibit for this year.

The Oil Companies are well represented, with such exhibits as Havoline's giant thermometer, Sinclair's dinosaur exhibit in animation, and the Standard Oil Company who are bringing to the Exposition Allyn King and his 35 cats. Just how this exhibit ties into "oil" the writer was not able to ascertain at the time this was written.

The exhibit of Hudson Motor Car Company, which last year operated a television theater in the Electrical Building will be missed since Hudson has decided not to exhibit this year.

The Exposition administration itself is contributing to automotive exhibits. Repeated again this year is the pageant "Wings of the Century" which shows the history of transportation in this country since the coming of the white man, with all vehicles including the early automobiles actually running. An automotive week will also be run during the summer it is understood.

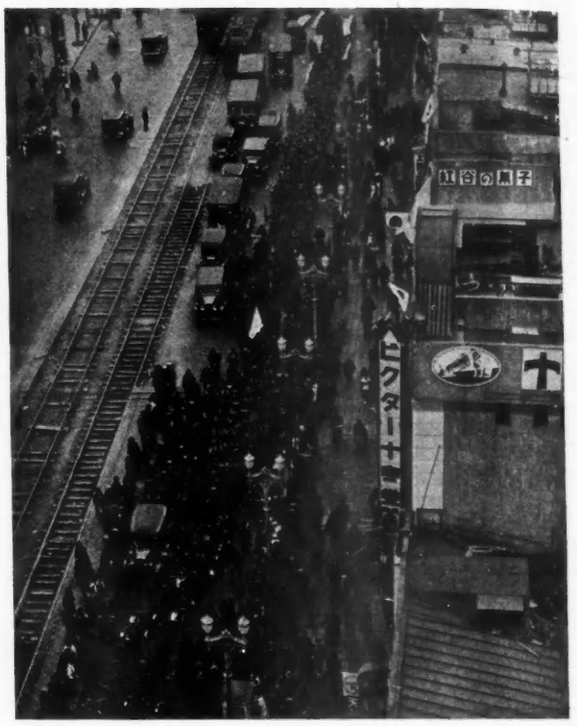
Included among the exhibitors in the Ford building in addition to those already mentioned are: Aluminum Company of America, American Brass Company, Anaconda Copper Mining Company, Amoskeag Mfg. Co., Bendix, Champion Spark Plug, Detroit Gasket, Essex Wire Corp., Houdaille Hershey, Motor Products Corp., Shelton Looms. Thompson Products; Timken Detroit Axle, United Engineering and Foundry, U. S. Rubber, Waltham Watch Co. and Spring and Wire Corp.

Germany's Super Highways

The system of super-highways now under construction in Germany will be owned by a subsidiary of the German State Railway Corporation and will therefore be private in a sense. Tolls will be charged for their use. "Highway stations" similar to railway stations will be erected at suitable intervals, at which there will be gasoline pumps, repair stations, rest rooms, restaurants and overnight accommodations for tourists. Equipment for road maintenance, including snow plows, will also be kept at these stations.

Is Japan Headed for World

by Norman G. Shidle



75 to 80 per cent of the cars now in service in Japan are G.M. and Ford products

AUTOMOBILE manufacturing gives evidence of becoming serious business to the Japanese.

Forces stimulating greater Nipponese activity in truck, bus and passenger car production are varied and vague. They must be guessed at rather than expounded. Some are economic, some military and some political. Some result from conscious planning toward establishment of a domestically controlled automotive industry; some represent an unconscious, yet natural, groping for additional means of utilizing in home industry more of a population which has doubled since 1873 and which continues to increase at the rate of approximately a million a year.

With frigidly polite diplomatic notes being shuttled between Washington and Tokyo; with Great Britain threatening to do economic battle with Nippon on a large scale; and with Japan badly in need of increasing its commodity exports to keep pace with its mounting volume of imports, formation of a great automobile trust in the land of cherry blossoms may have implications more important than the size of its immediate business would indicate.

In the last twelve months automotive events have moved rapidly in Nippon. (By official fiat, the name of the empire became Nippon a few weeks ago.) Today at least three Japanese-controlled companies are definitely embarked on the still-unfamiliar sea of automobile manufacturing. And the unity of purpose of the Japanese is indicated by the fact that all three have a combined interest in a newly organized Manchurian subsidiary for distribution —and perhaps the later manufacture —of trucks and cars in the newly conquered territory.

Largest and most important is the Automotive Manufacturing Co., Ltd. (Jidosha Seizo Kabushiki Kaisha) of Tokyo. Resulting from a merger early in 1934 of the Japan Industry Co., Ltd., and Tobatta Foundry Co., this new organization is reported negotiating for purchase of an important minority interest in General Motors of Japan, Ltd.

Affiliation with General Motors would give this powerful new combine a direct interest in the company which assembles about half of the motor vehicles sold in Japan. A brief glance at the background of the companies which merged to form this Automotive Manufacturing Co., Ltd., capitalized at 10,000,000 yen,* indicates the potential forcefulness of the combination which will manufacture the small Datsun cycle-car and also light trucks up to 1½-ton capacity in addition to supplying some parts to the General Motors and Ford assembly plants.

Back as far as 1929, motor vehicles were being manufactured in Japan on a small scale by Ishikawajima Automobile Manufacturing Co., Dat Automobile Manufacturing Co. and Tokyo Gas and Electric Co.

During 1931 the Dat company, which built a small truck, was merged with Tobatta Foundry Co., a subsidiary of the powerful Mitsubishi interests, which had already been making some Chevrolet and Ford parts both for production and replacement purposes.

In 1932, production of the Datsun cycle-car was begun.

In December, 1933, further integration took place with the formation of a new automobile manufacturing company under the joint management of the Japan Industry Co., Ltd., and the Tobatta Foundry Co. under the presidency of Yoshisuke Ayukawa, who formerly had been president of both of the separate organizations. The company resulting from this December, 1933, merger is the 10,000,000 yen Automotive Manufacturing Co., Ltd., of Tokyo. Tobatta Foundry Co. furnished 40 per cent of the capital and Japan Industry Co. furnished 60 per cent.

It is this new organization, already the culmination of several combinations of the most powerful Japanese automotive interests, which is said to be negotiating for a heavy

* Yen at par = 84.4 cents; current exchange = 30.3 cents.

Automotive Power?

A timely discussion of the economic significance of her recent moves to expand motor vehicle production

minority interest in General Motors of Japan, Ltd.

Another important manufacturing unit is the Automobile Industry Co., an independent company organized by the Ishikawajima Automobile Manufacturing Co. of Tokyo. The Ishikawajima company has been manufacturing Sumida trucks and cars for several years. The Automobile Industry Co. was organized in 1933 and is interested only in the production of heavy trucks and buses and engines for such vehicles. It has no interest in building light passenger cars.

Tokyo Gas & Electric Co. continues to build trucks in excess of 2½-tons capacity and is said to be experimenting in a small way with production of passenger cars of the Nash-Buick size. Merger of the automotive operations of this company with the others already combined in Automotive Manufacturing Co., Ltd., has been rumored, but thus far has not taken place.

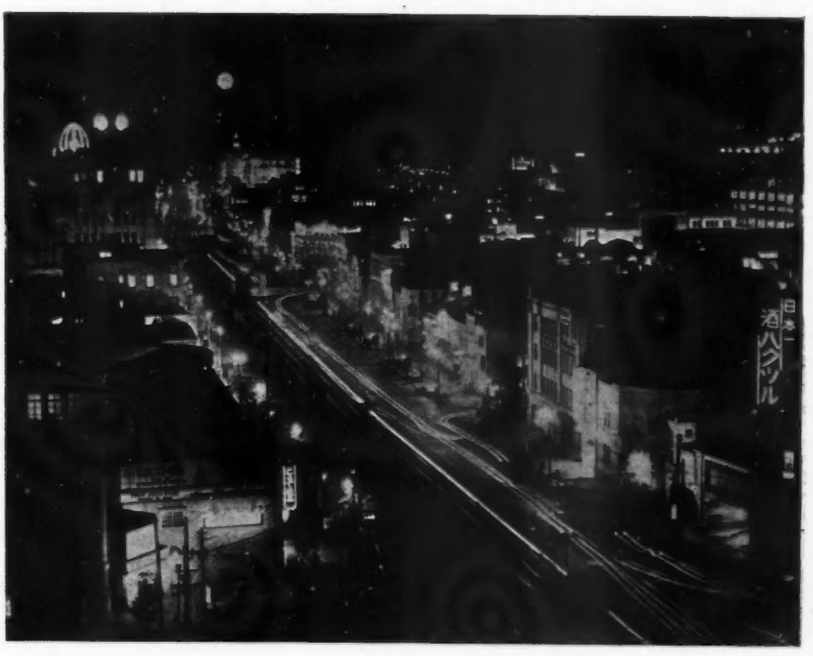
The Japanese Government Railways are encouraging the development of an automotive manufacturing industry in Japan by purchasing heavy trucks for their door-to-door delivery services. These heavy trucks are being manufactured by Mitsubishi Kobe Works and by Kawasaki Dockyards, as well as by the Automobile Industry Co.

Japanese newspapers last November carried rumors of negotiations between Japan Industry Co., Ltd., and Ford Motor Co. looking toward purchase of Ford's Japanese plants for the former. There is every reason for believing, however, that no such negotiations are in progress at the present time and that the Ford operations will remain independent of Japanese interests.

Motor trucks play a dominant part in the motor vehicle manufacturing plans of the Japanese, although a growing interest in passenger car production is discernible. The manufacturing plans of Automotive Manufacturing Co., Ltd., made prior to the reported negotiation with General Motors, call for completion by the middle of 1934 of a plant at Koyasu with the capacity for production of 100 Datsun cars per day. To this end, the latest American machine tools recently ordered are now on their way to Nippon. The big Japanese trust also will manufacture light trucks up to 1½-tons capacity.

Volume of Japanese automobile business thus far has been so small as to be negligible when viewed from American statistical standpoints. Total output of motor vehicles of all kinds by Japanese firms probably never has been exceeded 1500 units —and subsidies on trucks sold to the government have helped to boost the total even that high.

American cars have sold much better than the domestic product in Japan. Within the Japanese Empire there are now in use about 112,000 motor vehicles. It is probable that about 75 to 80 per cent of these



Night motor traffic streaks this view of Tokyo's "White Way"

are products of General Motors and Ford local assembly plants, these two companies having been almost equally successful in the Japanese market. The remaining 20 to 25 per cent consists largely of imported American cars, with a scattering of imports from other manufacturing countries. In 1933, according to U. S. Department of Commerce figures, cars and trucks actually imported into Japan totalled 388 from the United States, 92 from Great Britain, and 11 from elsewhere, while chassis imported were 672 from the United States, 98 from Great Britain, and 10 from elsewhere.

Lack of good roads and relatively low incomes per capita have combined to make the market for privately owned passenger cars in Japan almost negligible. Most passenger cars are used in taxi service, although a very slow increase in interest from private owners is reported.

Were one to judge the importance of the Japanese automotive growth purely in the light of present and past figures, the subject could be of only minor importance. The increasing importance of Japan as a world power, however, and the quite evident interest of its government as well as its business men in development of an automotive industry under Japanese control make the whole matter worth serious analysis.

While business interests both here and abroad claim to see no political nor military significance in the Japanese automotive manufacturing development, English language newspapers emanating from Japanese sources make no bones about the nationalistic basis of the current movement.

Army Favors Consolidation

"Cries of the War Ministry and the Ministry of Commerce and Industry for consolidation of the Japanese automobile manufacturing industry are rising with greater frequency and greater insistence," said the *Trans-Pacific* on Nov. 11, 1933, adding: "The Army thinks automobiles are necessary for national defense. The other ministry agrees. Both want to give all kinds of protection to the industry providing manufacturers will agree."

And shortly afterwards it would seem that manufacturers did agree.

The combined Japanese-owned plants today probably have a capacity of 2,000 vehicles per year, but the newly projected Automotive Manufacturing Co., Ltd., plant at Koyasu is expected to be capable of building some 20,000 to 30,000 vehicles per year after its completion.

All of the important Japanese automotive organizations have a part ownership in the newly formed Manchurian Automobile Co. which will buy Japanese-built motor vehicles and parts and distribute them in Manchuria. No Manchurian factory is projected at the present time, but such a plant can readily be envisioned as a part of future developments. Some of the stimulating forces behind this Manchurian project, perhaps, are indicated by the following paragraph from *Trans-Pacific* of Oct. 19, 1933.

"The Ministry and the Army," this publication states, "are said to be agreed as to the necessity of controlling and rationalizing the automobile industry in Japan and Manchukuo as a single unit. . . ."

How great a factor is Japan likely to become in the automotive field?

Can it conceivably develop so widely as to affect American automotive business in any important way?

Different observers answer these questions in quite different ways.

All seem agreed that the Japanese quite conceivably might make the going very hard for American cars, trucks and parts within the confines of the Japanese Empire.

Even that, some close observers say, is unlikely. So far, Japanese users have insisted on buying American-designed products to a large extent. Japan has not yet been able to get its own people to buy half as many Japanese-built cars as its Japanese-controlled companies have been able to produce.

Advanced Ideas Lacking

Admitting possibility of future progress, these skeptics contend that the big trouble will come when technical advances become necessary, because Japanese have no genius for automotive design. As imitators, they can do fairly well, but they seem incapable of originating commercially sound technical ideas. They have a strong tendency, in fact, to become very enthusiastic about "trick" ideas and peculiar constructions. Three-wheeled cars and automobiles which run by clock-work do not get laughed out of commercial court in Japan half so quickly as they would in practical-minded United States.

Generally speaking, Americans close to the Japanese situation do not view with any alarm the most strenuous efforts of Japanese to capture world motor vehicle markets. Despite low labor costs, American observers say, it is simply impossible to produce automobiles in Japan with Japanese labor, Japanese technical skill and Japanese methods anywhere nearly as cheaply as in the United States.

With all of its knowledge and technical skill, it is probable that General Motors, which now sells a Chevrolet in Tokyo at about $1000, would have to charge nearer to $1500 for that same car if its parts actually were produced in Japan.

So far as the possibility of Japanese-produced cars competing with American cars in the United States is concerned—even assuming that there be no tariff barriers whatever — nobody even remotely familiar with the actual facts will take such speculation seriously.

Loudest of those who are crying "Wolf! Wolf!" about the Japanese automotive developments is Sir Henri Deterding, head of the vast Shell oil interests and an outstanding figure in international business. Sir Henri's view is fairly well summarized by the following paragraphs of a statement which he issued last fall:

"I feel the deepest respect for the clearness of mind (not soiled by the so-called red democracy) of the Japanese, increased still further by their unlimited energy. Few people elsewhere realized what Japan was aiming at when she carried out her intention to reduce the Japanese yen from 50c. to even as low as 20c., and it is only known to a few people that in so doing, Japan has adopted the silver standard. Such humbug by which almost the whole of Europe and America is led by the nose, is undoubtedly clever and cunning.

"But has the motorcar industry—one of the most important in the United States—ever looked into the future, and realized that where Japan is already able to produce bicycles that come on the market in Holland and the Dutch East Indies at U. S. $5 each, she will certainly be able to produce motorcars at a great deal less than $500?

"A Japanese motorcar industry—once it has been properly established with the aid of their cheap monetary unit, the yen (made so cheap by the assistance of the High and Mighty—the Gold Economists and Silver enemies) being able itself to produce steel cheaply—and therefore only needing to buy rubber—is sure, in the long run, to produce cheap cars at about $100.

"This ought to be a warning to the motorcar industry, which is so powerful at present. . . ."

Some British tabloids are excited about the Japanese "menace." "Japan's Cheap Cars Plan to Flood the World," cried a headline in *The Daily Mirror* (London) on April 5, 1934. The general tenor of the article is indicated by the first three paragraphs which read:

"Plans to flood Britain's home and overseas markets with "baby" motorcars, ultimately selling for probably as little as £50 in some cases, are being made in Japan.

"For some time British motor-car manufacturers have received warnings from their agents in the Far East of the proposed great onslaught. Japan is a comparative newcomer to the industry, but in a few years she has made striking progress.

Output Doubled in 1933

"Last year she doubled her output of motor vehicles and a four-fold expansion of the industry in less than two years in forecast in well-informed quarters. . . ."

All of which proves that the effect of a statement lies largely in the way one says it. The alarming last paragraph of our British contemporary might just as well have stated that Japanese-controlled automobile production in 1929, 1930 and 1931 averaged about 450 vehicles per year (mostly trucks) and that in 1932 it rose only to 840 vehicles —and that even if it quadrupled in the next few years the total volume still would be only about 4,000 to 5,000 ve-

hicles—hardly a volume with which to dominate world markets!

Effective merchandising, too, is important in gaining world markets. Success outside its own Empire must be part of a general development in which many elements of Japan's economy are involved. Pertinent are the comments of Dr. John E. Orchard of Columbia University, a leading American authority on industrialism in the Far East. Japan already has missed several chances for economic leadership in Asia—where many factors combine to place her in a preferred position, Dr. Orchard says in *Foreign Affairs*. The first chance, he shows, came after the Japanese victory over Russia in 1905—a victory which caught the imagination of all Asiatics and brought great popular acclaim to Japan in that area. "There could scarcely have been a combination of circumstances more favorable to Japanese trade expansion, "Dr. Orchard says, continuing:

"There was soon reason to doubt, however, whether Japan had acted as the savior of China. By the treaty of Portsmouth, Russia was forced to surrender the greater part of her gains in Manchuria. But they were transferred not to China but to Japan. There was disappointment in Asia and enthusiasm for the victor gave way to suspicion."

After the World War came the second opportunity . . . "for the period of the War Japan enjoyed a virtual monopoly of the trade of Asia and the South Seas. But in the rush to fill orders her traders used methods which were short-sighted. Insufficient attention was given to quality and to the value of a reputation for business integrity."

The Motor and Equipment Manufacturers Association in a series of recent bulletins has called attention to Japanese imitations of American products, trade mark infringements and other forms of unfair competition, some arising from actually unethical practices, but some accruing as much from the carelessness of American manufacturers in protecting their designs under Japanese laws as from any other cause.

Automotive business is picking up in Japan at the present time. The reported business alignment of the most important Japanese automotive interest with General Motors would seem to mark a step toward cooperative integration of interests which eventually must work for the best interest of both groups and of both countries. There can be little question that Japan is seeking to establish an automotive manufacturing industry of its own. Doubtless it will seek to sell the products of that industry widely, but analysis of all of the economic factors involved indicates that, so far as motor vehicles are concerned, Japan is not destined to become an important world factor—at least for many, many years to come.

Probably it is equally true that the Japanese will put forth extremely strong efforts to overcome these factors hindering their automotive growth, because as a nation they are faced with general economic problems unequalled in most other countries of the world. And, as a people, they probably are more willing regularly to make personal sacrifices for the general good than are the citizens of most other countries. One cannot help recall the penetrating comment of Count Hermann Keyserling when he said in his "Travel Diary of a Philosopher":

"Patriotism is the profoundest factor of the Japanese. His relation to his country, its greatness, the continuance of its glorious existence, means to him what the relation of Brahma means to the Indian, what membership of the universal order means to the Chinese. It is not easy for us to enter into this quality of profundity; it is not profound to us any more. But every one has known his moments during which feelings from a far-off hoary past have rushed irrepressibly from a dark source into his consciousness, in which blood relationship and national solidarity seemed profounder ties to him than his relation to God or the universe. In those moments he was related to the Japanese."

First Quarter's Statement

Vehicle Companies	1934	1933
11 companies reported	— $1,459,130	—$10,904,251
General Motors	+ 29,319,523	+ 6,870,007
Reo Co.	— 272,881	— 459,245
American LaFrance & Foamite	+ 2,526	— 50,125
Total—14 companies	+$27,590,038	— $4,543,614
Other Automotive Companies		
39 companies reported	+ $5,118,405	—$11,082,878
Briggs Manufacturing	+ 1,550,608	— 895,963
Thompson Products	+ 147,941	— 72,996
Houdaille-Hershey Corp.	+ 250,246	— 218,435
Noblitt-Sparks	+ 74,737	— 41,766
Ex-Cell-O	+ 136,076	— 58,830
Reynolds Spring	+ 89,390	— 4,179
Muskegon Specialties Co.	+ 9,317	— 39,580
Continental Diamond Fibre Co.	— 70,202	— 138,454
Raybestos-Manhattan	+ 292,973	— 63,428
Wilcox-Rich	+ 138,101	— 23,203
Murray Corp.	+ 228,610	— 445,688
Total—50 companies	+ 7,966,202	— 13,085,400

External Broaching in Chevrolet Transmission

(Continued from page 682)

Table 1 gives some additional data on the broaching operations described above, including the shifter fork, for which there is no photograph. It is most interesting to find that the alloy steel sleeves are slotted at a cutting speed of 36 ft. per minute, which is about 9 per cent faster than the highest speed reported in our SAE Annual Meeting paper. Note also the figures for the life of the broach, particularly for cast iron, where the life is about 150,000 pieces. However, both broach life and interval between grinds are notably lower in the case of the shifter fork.

The matter of cutting fluids is of outstanding importance in the development of external broaching practice. Although an extreme pressure type of sulfurized compound has been considered essential, Chevrolet and others have found it possible to use the less expensive soluble oils on many operations, and have found them to meet the requirements in every respect.

As noted in Table 1, the soluble oil is diluted 10 to 1, which is a very economical mixture, particularly where it is used as standard throughout the department.

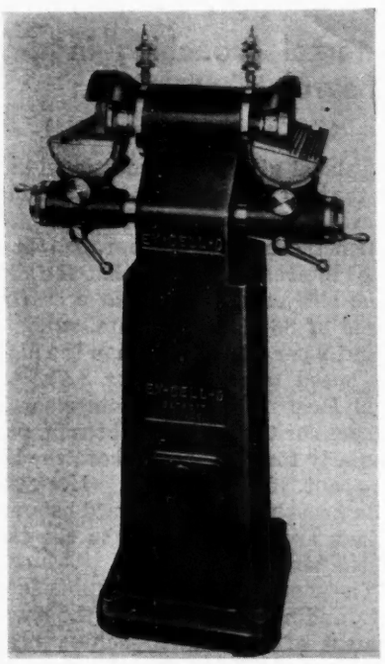
The only job that demanded a sulfurized material is the tough secor stamping, and this is handled by a 4 per cent sulfurized mineral oil used full strength. The cast iron transmission housing is broached dry.

This brief study marks the development of an art that is fast spreading in automotive production shops. Chevrolet is making a decided contribution to the new art of manufacture through the pioneer work of its factory organization.

NEW DEVELOPMENTS
Automotive Parts, Accessories and Production Tools

Grinds and Laps Carbide Tipped Tools

A Grinding and Lapping Machine for sharpening cemented carbide tipped tools has been placed on the market by Ex-Cell-O Aircraft & Tool Corporation, Detroit, Mich.



Ex-Cell-O grinding and lapping machine

The introduction of hardened and ground plates on the surface of the tables at each end of the machine is said to produce greater accuracy as the strips reduce wear on the surface of the table and make it easier to keep the top of each table clean while the machine is in operation.

These strips are mounted on adjustable "U" shaped tables which have a horizontal micrometer adjustment. Two hardened and ground strips are mounted parallel with the face of each wheel, on top of the table. Two eccentric pins are placed between these strips to aid in aligning them properly. These strips form a slot which acts as a guide for the tool support. Across the ends of each table and in front of each wheel is mounted another hardened and ground plate.

An inbuilt balanced motor with double-end shaft projection is mounted at the top of the main casting. It is rated at ¾ hp., 3450 r.p.m., and can be furnished for either 220, 440 or 550 volt, three-phase, 60-cycle current. Ex-Cell-O precision ball bearings are used on each end of the motor.

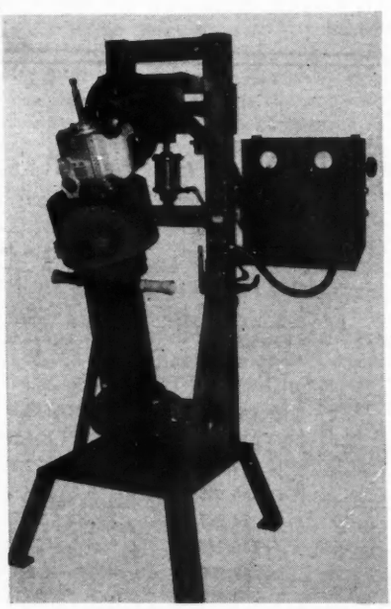
A cupped wheel is used at one end of the motor. The wheel is 6 in. in diameter with a 1¾-in. grinding surface on the side of the wheel.

The special iron lapping disk on the other end is 6 in. in diameter, ¾ in. thick, with a 1¾-in. lapping surface on the front and a ¾-in. lapping surface on the back. When a large number of right and left-hand tools are to be ground on the same machine, a motor reversing switch should be installed.

63 Feet per Minute with New Welder

Automatic machines for welding automobile muffler assemblies by the shielded carbon arc process are announced by The Lincoln Electric Co., Cleveland. The machines, equipped with Electronic Tornado welding heads, are said to have a production capacity of 115 mufflers per hour.

The equipment used consists of two machines, one a vertical machine, as shown, the other a horizontal machine. With the welder illustrated the operator places the muffler in position, lowers the welding head, edge welds the tubes in place, raises head and turns muffler upside down and welds the pipes on the other end. The complete operation requires 30.5 seconds. Approximately 118 mufflers per hour may be welded with this machine. Actual welding is at the rate of 63 feet per minute.



Lincoln automatic welder

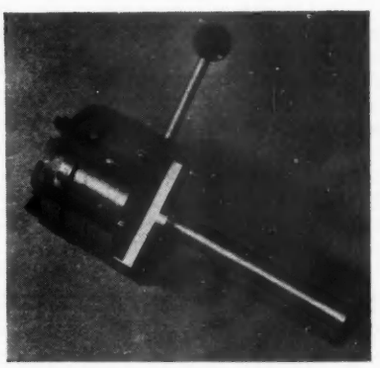
A second machine lap welds muffler tubes for connection to the exhaust pipe. Floor to floor time is 112 mufflers per hour.

In one installation in a large plant two men operated four of these automatic welders.

The welding head remains stationary while the parts being welded revolve under the arc. Lincoln automatic muffler welders can be obtained for welding various types of mufflers.

Stationary Type Tangent Dies

The Jones & Lamson Machine Company, Springfield, Vt., has brought out a line of stationary type J and L Tangent Dies of the pull-off type. The chaser holders are ground and lapped on the dovetails and take a wide bearing surface on the ground and lapped dovetail slots in the die body, as well as on the die body face. These holders can be changed, if necessary, without disassembling the die. These dies are locked by pushing the locking lever handle in one direction and may be tripped, when desired, by pushing it in the opposite direction.



Stationary Tangent Die

To make pitch diameter adjustments a spring operated pawl, which engages teeth on the adjusting nut, is raised and the adjusting nut moved to the proper position. After adjustment, the pawl is permitted to settle back in the proper tooth where it securely locks the adjusting nut. The teeth on the adjusting nut permit adjustments of one quarter thousandth (0.00025 in.).

The driving flange is screwed on to the shank and doweled in place, thus affording a drive at a point farthest from the center of the die. This driving arrangement also permits eccentric float to take care of misalignment of the die and work. The amount of eccentric float is determined by the clearance allowed between the outside diameter of a shank integral with the die body and the bore of the outer shank

sleeve. On most machines requiring stationary dies a long shank may be employed.

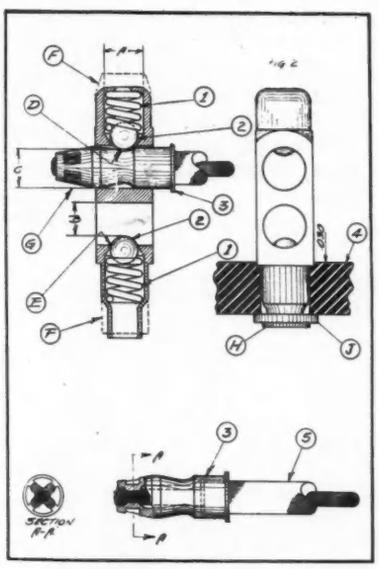
All chasers are interchangeable in revolving and stationary dies of the same capacity. Only one set of chaser holders is required for any right-hand threads within the rated die capacity, whether standard or special and regardless of diameter or pitch.

The dies are available in five sizes with a threading range from No. 8-32 to 2 in. diameter.

A New Type of Electrical Connectors

A new type of car-wiring connection has been developed by the H. A. Douglas Mfg. Co., Bronson, Mich. Terminals are secured to the ends of the cables by swaging, as shown by the lower view in the drawing reproduced herewith. The terminals snap into position in the spring-chamber receptacles as shown in the upper view. These terminals and receptacles permit electrical connections to be made by unskilled workers.

In addition to having developed these connectors, Mr. Douglas designed and built switches, junction boxes and other electrical fittings equipped with spring chambers adapted to take the snap terminals, so that the complete system may be readily adapted to all types of

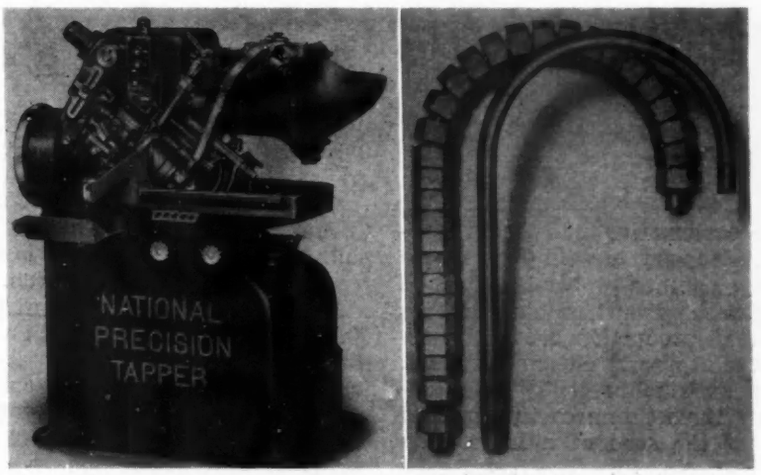


Douglas electrical connector

circuits. He has also developed production tools to swage these terminals to the ends of the cables. These swaging tools, we understand, are loaned to manufacturers free of charge.

The system is being offered to car and truck manufacturers as offering the advantages that electrical connections that will be efficient throughout the life of the car can be made on the assembly line by unskilled labor at a cost comparing favorably with the present system.

NEW DEVELOPMENTS
Automotive Parts, Accessories and Production Tools



National nut tapper

New Precision Nut Tapper

The National Machinery Company, Tiffin, Ohio, announces a new line of precision nut tappers which are said to make commercially possible the tapping of Class 3 and Class 4 fit nuts. The machines are built in a full range of sizes from ¼ in. to 1 in. nuts, both hex and square, and they can also be arranged for tapping Dardelet nuts.

The machines are ball bearing throughout with the working parts running in an oil bath. Accurate adjustments have been provided to insure the exact positioning of the tap and to control the feed for pitch.

A special type of "hook" tap is employed, which retains the advantage of the original bent tap plus the ability to keep the tap accurately positioned for close limit tapping. Experience is said to prove that the accurate alignment of such a tap, plus its ability to float, makes it perfectly practical to obtain the closer tolerances, such as Class 3 or Class 4, and that such a tap is freer from breakage.

An improved type of hopper serves to turn the nuts as they are delivered to the chute, so that the nuts are presented to the tap with the bottom face against the injector. This insures the nuts being tapped square with the bottom face.

The machine is electrically driven, and fully protected by automatic safety devices. When the machine stops, a telltale light signals the operator.

Liquefied Petroleum Gases Have High Octane Rating

PHILGAS COMPANY, a subsidiary of the Phillips Petroleum Company, with offices in the General Motors Building, Detroit, has sent out a pamphlet entitled "A New and Better Fuel for Internal Combustion Engines." It discusses the liquefied petroleum gases consisting principally of butane and propane which are now being shipped in special tank cars under their own vapor pressure, which varies with the temperature. Among the advantages claimed for these volatile fuels is that they have a high anti-knock value, the octane rating of propane being 125 and that of butane 93. In addition to being used in both large and small stationary engines, these fuels are being used by several motor car engines for block-testing or running-in of their engines. In block testing, each engine can be provided with its own "mixing device," or else a central mixing device can be used for the whole test room, from which the combustible mixture is distributed to the different engines.

The 100 Flex-Arc Ampere Welder and its Application to Automobile Body Welding

by S. D. Bradley, Jr.
Detroit Office
Westinghouse Electric & Manufacturing Company

IN the automotive industry, it is often necessary to weld parts of the body together by hand instead of using flash or butt welding because the small production does not warrant the expensive dies and fixtures.

One such job recently arose involving the welding of the top and sides of the cowl of a large body (see Fig. No. 1). The metal used was No. 16 gage cold drawing steel, and the weld about 15 inches long on both sides. It was decided to handle the job with a Westinghouse 100-ampere Flex-Arc A.C. Welder.

A special fixture was built as shown in Fig. No. 2. In this cross-section, "A" is the top of the cowl and "B" the two sides. Parts "C" are two heavy iron castings, used to clamp the work and also to aid in carrying away the heat of the weld. It should be noted that these castings are so designed as to allow barely enough room for the operator to work. However, it was found that the heat-dispersing qualities of this set-up and the "hard" holding of the work offset any disadvantages in operating. Parts "D" are two copper blocks used to back up the welding. These are also heavy to help cool the work and to hold the work tight. This point of "tightness" is stressed to prevent the first part of the weld from contracting and pulling the sides of the last part of the opening together. Parts "E" are clamps to hold the top of the work in place. Points "F" are the openings left between pieces for the welding operation.

To set up, the clamps "E" and "C" are raised. The top of the cowl "A" is placed in position and held there by guides. The sides, "B," are next put in position, and again held by guides. Clamps "E" are then closed and pulled in hard with air cylinders, using about 125 pounds air pressure. A gap of about ⅛ in. is left between the pieces of work. Clamps "E" are then closed and pulled in by air. The piece is then ready for the welding operation.

Note that the direction of welding is from the inside of the body toward the outside.

For the actual operation, approximately 85 amperes were used with a 3/32-in. bare electrode to give 100 per cent penetration and a slight "bleed" through. The wire used was an inexpensive grade of "production" wire.

Two men worked on this fixture, one on each side, each having his own welding set. In setting up, one removed the finished piece and the other put the new work in place.

Several difficulties were encountered, but were easily overcome. The edges of the work sometimes were so far out of line that too large a gap was left, or the pieces overlapped. Closer finish work on the dies, however, remedied this and it was also found that a variation in the gap of from 1/16 in. to 5/32 in. was not detrimental.

The results obtained were very gratifying. An analysis of cost showed that the A.C. arc welder cost 9c. an hour to operate, figured on the basis of 1.5c. kw. hour for power and a load factor of 60 per cent. The complete set-up, load and unload, and welding operation, took about 90 seconds. The finishing of the arc welding job was practically nothing because the "bleed" metal flattened out on the copper block. There was no warping from the arc weld, the heat being confined to a strip ¼-in. on either side of the weld. Only a "shade" of solder was required to make the arc-welded job a finished surface.

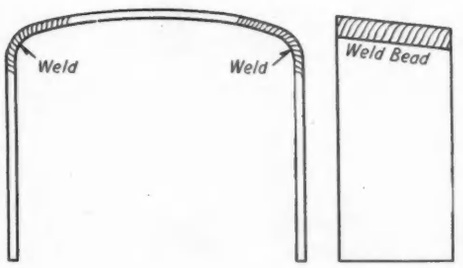


Fig. 1 (Top)—View of welded sections joining top and sides of cowl for large body. Each weld is about 15 in. long

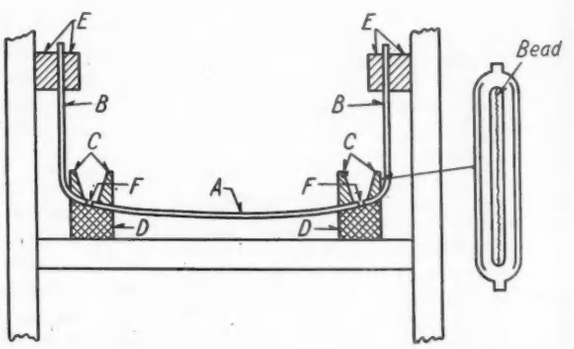


Fig. 2 (Below) Showing details of welding fixture for cowl in Fig. 1, C and E., are heavy hold-down clamps, while D, are copper backing blocks